APRIL 15, 1916.

WHOLE SERIES, VOL. XL. No. 4. THIRD SERIES, VOL. XXXII.

PERIODICAL ROOM
RECEIVED
APR 18 1916
UNIV. OF MICH.
LIBRARY

The THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE

A Monthly Journal of Practical Therapeutics

Edited by

H. A. Hare, M.D.

Professor of Therapeutics and Diagnosis in the Jefferson Medical College,

GENERAL THERAPEUTICS,

and

Edward Martin, M.D.

Professor of Surgery in the University of Pennsylvania,

SURGICAL AND GENITO-URINARY THERAPEUTICS.

EDITORIAL OFFICE, N. W. Cor. 18th and Spruce Streets, PHILADELPHIA, PA.

SUBSCRIPTION RATES:

United States and Mexico, one year,	Two Dollars.
Canada, one year,	Two Dollars and Fifty Cents.
Foreign Countries (postage prepaid), one year,	Ten Shillings.

E. G. SWIFT, Publisher, DETROIT, MICHIGAN, U. S. A.

FOREIGN OFFICES:

LONDON, ENGLAND—19 & 20 Great Pulteney St., W. SYDNEY, N. S. W., AUSTRALIA—125 York St.
WALKERVILLE, ONT., CANADA. MONTREAL, QUE., CANADA—118 St. Paul St., W.
BOMBAY, INDIA—70 Hornby Road.

Entered at the Post-Office at Detroit, Mich., as second-class mail matter.

COPYRIGHT, 1916, BY E. G. SWIFT.

Hay Fever

Convincing Clinical Data Prove Value of

Pollen Vaccine

DURING 1915, *Lederle's Pollen Vaccine* was used by over 600 physicians for the prophylaxis and treatment of Hay Fever. The clinical data submitted to us show *83 per cent favorable results from Pollen Vaccine as a prophylactic against Hay Fever, and 89 per cent favorable results in the treatment of Hay Fever.* Asthmatic symptoms were relieved in 84.2 per cent of the cases.

Booklet sent on request.

Lederle Antitoxin Laboratories

Schieffelin & Co., Distributors

New York

THE THERAPEUTIC GAZETTE

INCORPORATING

MEDICINE AND THE MEDICAL AGE.

Whole Series, Vol. XL. | DETROIT, MICH., APRIL 15, 1916. | Third Series, Vol. XXXII, No. 4.

ORIGINAL COMMUNICATIONS.

COMMON AFFECTIONS OF THE NOSE AND THROAT—THEIR EARLY RECOGNITION AND TREATMENT.[1]

BY CHARLES PREVOST GRAYSON, M.D.,

Professor of Diseases of the Throat and Nose in the University of Pennsylvania, Philadelphia.

The first difficulty that confronts one in preparing a contribution for a general meeting such as that of this evening is that of choosing from among the many diseases of the nose and throat those the consideration of which will prove of the greatest practical interest to a non-specialist audience. The "common affections" to which we are limited by the title on the programme is, however, indulgently indefinite. It may mean those that are of most frequent occurrence or those that are of only trifling significance, but whatever meaning we may assign to it, it is always to be remembered that however commonplace and apparently innocent in themselves a certain group of affections may be, there is not one of them that is not potentially as grave and menacing as those that are initially serious.

It seems to me that it would not be making the best of this opportunity, it would not be giving you a proper return for the compliment of being invited to address you, if I confined my paper to such time-worn topics as coryza, hay-fever, or adenoid growths. Interesting as these may be in the abstract, I know that in the concrete you are already sufficiently familiar with them to recognize them promptly and to make no mistakes in their treatment. I am inclined, therefore, to select those affections that are more or less intimately associated with the broad field of internal medicine, not forgetting, however, that in doing even this there is scarcely any diseased condition of the nose or throat that is entirely free from such association. If we exclude traumatism and its immediate effects, there is scarcely any disturbance of this region that has not its malign influence upon the general health or that has not some systemic factor more or less intimately concerned in its etiology. Within even the past decade the rise in medical estimation of the vital importance of nose and throat diseases has been extraordinary. From comparative obscurity it has climbed to its place in the sun with astonishing rapidity, and the physician who does not now recognize the diseased nose or throat as a possible if not frequent factor in a large number of organic or general pathologic processes is, to say the least, not in advance of the procession of scientific medicine. Of the disorders of the upper air-tract practically all are accompanied by more or less vascular disturbance, secretory derangement, and nerve irritation, and by perverted sensibility and impaired or exaggerated nutrition of the mucous membrane. The merely local symptomatic expression may be of small moment, but when we remember that such pathological features render the tissues of this region much less resistant to the many infective organisms to which they are constantly exposed, and when, in addition, we remember that because of certain well-known anatomical peculiarities local infection here almost always means varying degrees of secondary systemic infection, we should

[1]Read at a general meeting of the Philadelphia County Medical Society, November 24, 1915.

have no difficulty in realizing that either delayed recognition or injudicious treatment may, in a pathological sense, quickly transform the insignificant mole-hill into a very formidable mountain.

A full appreciation of the serious possibilities of these primarily trivial disorders is also the more desirable because so brief a time is required for their establishment as chronic processes. This implies not alone their increased resistance to remedial measures, but an increased susceptibility on the part of the individual to acute exacerbations. In spite of these established facts, are not many of us apt, for instance, to regard rather lightly a child's first coryza, to deprecate anything in the way of treatment, to ignore even the simple prophylaxis that might protect it from subsequent attacks? And yet when this neglected first attack leads, as it too often does, to a second and this to a frequent succession of them, each in all probability more severe and prolonged than the last, the lid is off of that child's upper air-tract, its nose closes, its mouth opens, and any prowling coccus or bacterium that pleases may enter freely and find not only a warm but a most nourishing welcome. You know perfectly well the extraordinary activity of the lymphoid elements of the mucous membrane of the child, you know upon what slight provocation this may become exaggerated to a pathologic degree, and you will anticipate at once the almost inevitable hyperplasia of Waldeyer's ring that follows upon the development of the child's chronic rhinitis. You will not have to wait long for the symptomatic announcement of adenoids, of hypertrophy of the tonsils and a low-grade catarrhal inflammation of their lacunæ, and for the beginnings, perhaps, of that systemic sepsis that may end in widely disseminated areas of secondary disease. Moreover, recalling the anatomical fact that the Eustachian tube of the child is shorter, straighter, and more patulous than that of the adult, we need scarcely be surprised that otitis media becomes a frequent or even usual accompaniment of every infection to which chronic inflammation has rendered the child's nose and nasopharynx so easily liable.

In this connection, it seems to me that, if we are ever to be successful in stamping out, or diminishing to any great extent, the scourge of deafness, success must come through our solicitous care of the upper air-way in early life. The results of what has already been done in this way will be, I am confident, distinctly evident within the next generation or two. The municipality is doing work of inestimable prophylactic value in its inspection of the public school pupils, and if this service could be extended to the homes of the poor and the noses and throats of their children intelligently cared for at an even earlier age than that of school attendance, is it not almost a certainty that we would have fewer outbreaks among them of diphtheria, the exanthemata, whooping-cough, and epidemic sore-throat? In all likelihood the so-called "backward child" would become in time much more of a curiosity than he now is, and likewise the boy or girl with impaired hearing, two achievements of sociologic as well as medical importance.

And speaking of diphtheria and the exanthemata, it would be interesting to know the proportion of internists who are really energetic in their care of the nose and nasopharynx during the course of these diseases. There can be no question that those who are careful to maintain an approximate asepsis of these cavities have fewer cases with complications, with prolonged and severe pyrexia, and with regrettable sequelæ than those who are indifferent about it. The reason for this is anatomically obvious. In air-borne infections the nose represents our first line of defense, and when it is weakened by acute or chronic disease and fails to prevent the transit of a bacterial enemy, the nasopharynx becomes its first halting place and serves it as an undisturbed and admirably adapted station for further recruiting its numbers. I say undisturbed because the walls of this chamber are rigid, peristaltic movement does not extend above the palate, the cavity is almost wholly lined with squamous, not ciliated,

epithelium, and for purposes of drainage nature seems to have relied almost entirely upon the force of gravity. In a state of health when this space is constantly flushed by a limpid stream of normally blended serum and mucus, this means of drainage is without doubt ample, but when the glandular mixture is disturbed and the proportion of mucus becomes excessive, drainage may be retarded almost to the point of arrest. A moments' thought that will recall the rich deposit of lymphoid tissue in this region, its ready permeability, and the ease and rapidity with which the lymph stream will sweep bacteria and their toxins into the general blood current, will be quite enough to convince you of the supreme sanitary importance of nasopharyngeal cleanliness.

I do not propose to run the risk of telling you for the hundredth time what you have probably heard that often about adenoid growths, but while sparing you this, I am afraid that I am taking the same chance in saying a hurried word about the nasal accessory sinuses. Though you may not care to undertake the treatment of acute or chronic disease of these cavities, yet surely it will not be unreasonable of your patients to expect you to recognize without loss of time the existence of disease within them. Even should you not be possessed of the moderate technical skill necessary for a rhinoscopic examination and the discovery and localization of the usual purulent discharge, yet if you are sufficiently familiar with the several other clinical symptoms to have your suspicions aroused, a radiograph will greatly help to confirm or confute them, and, in addition, for the investigation at least of the frontal and maxillary sinuses the transillumination test may be as readily applied by the internist as by the rhinologist. A dark closet and the inexpensive apparatus needed for this test will add very materially to your diagnostic resources. It is not at all uncommon for the victim of a simple acute coryza to complain in a more or less casual way of a dull generalized headache, but when that ache becomes concentrated over the region of one or other of the sinuses and his casual complaint is transformed into one that is very apt to be profanely emphatic, when he is conscious of a sense of persistent fulness and pressure in the upper part of the nose, and this is accompanied perhaps by a degree or two of temperature elevation and a unilateral increase of the nasal discharge, the chances are that an infective organism has found its way into the suspected sinus and that there is some obstruction to the escape of the ensuing inflammatory products. The very essence of treatment in such cases consists in reëstablishing drainage and maintaining its freedom until the disturbing agents have been destroyed and cast out. I do not wish to shake your faith in the at times almost spectacular remedial value of vaccines, but I cannot say to you too positively that be the sinus inflammation acute or chronic, unless you first and foremost provide for adequate drainage you might as well fill your syringe with distilled water. Although it would be scarcely appropriate to class the chronic sinus empyemas among the "common affections" of the nose, yet they are by no means uncommon, and they are so important both in their immediate and secondary effects that they certainly merit being classed among those affections that you should quickly recognize.

Of the four sinuses, those that should be of by far the greatest interest to the internist are the ethmoid and sphenoid. With no more than a passing reference to the general sepsis that may proceed from their chronic purulent inflammation, I wish particularly to focus your attention on certain of the local and reflex disturbances to which disease of them may give rise. You are no doubt already well acquainted with the persistent dull headache and the neuralgias that ethmoidal disease may occasion, and when as a further result of a prolonged purulent discharge from this aggregation of cells we have an enlarged and degenerate middle turbinate, fringed perhaps with mucous polyps filling and closing to a great extent the upper half of the nasal fossa, is it not almost a mechanical certainty that we

will have serious interference not only with ordinary drainage but also with the venous and lymphatic circulation at the base of the brain, and as a consequence of this, many of the psychic phenomena that make up the depressing symptom-complex of aprosexia?

If I limit myself to but one of the several reflex disorders that may ensue upon this combination of ethmoidal and middle turbinate disease, I should say that asthma was the most frequent and deplorable. And with reference to this distressing disease I wonder how many of you could plead guilty to having treated one or more cases of it for weeks, or possibly months, without any great success, and yet without ever having thought of investigating the nose as a possible causative agent. Even though we may grant unreservedly that many cases of bronchial asthma are examples of anaphylactic reaction to certain protein molecules, yet, if clinical observation be worth anything, we are certainly justified in believing that a much larger number are due to some variety of intranasal disease.

As to the sphenoid sinus, your interest will be mainly concerned with the pernicious influence of its diseased conditions in the causation of persistent headaches and neuralgias and of functional disturbances of the third, fourth, fifth, and sixth cranial nerves. The studies of Haskins, Sluder and Onodi have clearly established the pathological relationship of the diseased sphenoid to these secondary affections that I have mentioned. Our greatly increased knowledge of the pathology and our quickened perception of the symptoms of hyper- and hypopituitarism, and the fact that the nasosphenoidal route for hypophyseal surgery is in many cases unquestionably the best, make it a matter of importance that you be so well informed concerning the regional anatomy of this sinus that you will promptly recognize the symptoms which its disease may provoke.

In spite, again, of the grave danger of exhausting your patience, I am going to make a very brief and merely incidental contribution to the literature of the tonsils. It is only in the way of emphasizing a portion of what I know you have already heard more than once. No one can have read the comparatively recent papers of Billings, Murphy, and Rosenow—an exceptionally strong and well-balanced trio of internist, surgeon, and pathologist—their papers dealing with the frequency and vital seriousness of focal sources of general systemic infection, without having been deeply impressed by their studies. Whether these foci are found in the tonsils, the accessory sinuses, the prostate, the appendix, or the gall-bladder is for my present purpose immaterial. The point of transcendent importance is that in the presence of certain types of infectious disease, general or local, these foci should be immediately and most carefully searched for, and the well-established fact that in by far the largest number of cases they will be found in the crypts of the tonsils will serve as my excuse for once more directing your attention to these glands. Nor can I dismiss them without an expression of genuine enthusiasm over the radical change for the better in the method of their removal as it is practiced to-day. I do not know of an operation the technique of which has been so rapidly perfected as has that of tonsillectomy. Its practically immediate and universal acceptance as a major operation made this technical improvement compulsory, and the large number of men who have contributed to the clear understanding of its anatomical and surgical details deserve most generous credit. As results of their work the risks of the operation have been minimized and the regrettable accidents and the injuries of the important surrounding structures that were rather frequent during its introductory years have now become conspicuous by their rarity. It was not surprising, as a consequence of these unfortunate mutilations and their possibly evil effects upon the quality of the voice and the ease and distinctness of articulation, that quite a number of eminent laryngologists should have raised their authoritative voices in criticism and with a hint of disapproval of the operation; but however well deserved criticism may have been even, perhaps, as recently as

a year or two ago, I think that it may now be successfully challenged by the brilliant work of scores of men in this and other cities. It has now become so clearly apparent that incidental injuries of this kind can be entirely eliminated by care, deliberation, and the skill that practice has developed, that hereafter the shafts of criticism must be leveled not at the operation but at the operator.

And now a concluding word about the larynx and the usefulness to you of the laryngeal mirror, and I am through. This valuable little aid to clinical examination would often serve you as the means to the early recognition, and the treatment also, of many serious conditions. The one symptom of hoarseness or aphonia might lead you through its use to the prompt diagnosis of tuberculous, late syphilitic or cancerous ulceration. It would enable you to at once distinguish between the functional aphonia of hysteria and that due to an acute laryngitis, to the presence of a neoplasm or to myopathic or neuropathic conditions of perhaps serious significance, and finally it would bring to your eyes the pressure palsies of the recurrent nerve incident to aortic aneurism, bronchocele, or disease of the mediastinal glands. For these and many other affections the laryngeal mirror would be to internists of such frequent and very great diagnostic value that I wonder its use by them is not a matter of daily routine.

I am uneasily conscious that I have not strictly observed the bounds that were intended for this paper, but I trust that in transgressing them I have not entirely wasted your time.

262 S. 15TH STREET.

THE GENERAL PRACTITIONER AND OBSTETRIC SURGERY.[1]

BY EDWARD P. DAVIS, M.D.,
Professor of Obstetrics in the Jefferson Medical College of Philadelphia.

In discussing this subject we fortunately can start from a common ground. Our profession always puts foremost the interest of the patient, and hence this shall be our first point of departure.

Who shall do obstetric surgery? Where and how shall it be done in the interest of mother and child?

It has lately become apparent that there is a distinct field of medical science known as obstetric surgery. We have long been familiar with the usual obstetric operations whereby delivery is effected through the vagina, but recently a new branch of this department has been opened in delivery by abdominal section. The word Cæsarian section no longer conveys accurately the many complications and varieties of procedure which delivery by abdominal section embraces. Even Cæsarian section itself without sterilization may now be done in six different ways, and when to these we add the various operations by which the whole or greater part of the uterus is removed, the procedures necessary when a pelvic tumor complicates pregnancy, when appendicitis, ectopic gestation or pyosalpinx is present, it will be seen that the field is a considerable one. The obstetrician is the one man who can best deal with these cases. The general surgeon and the gynecologist may have ample technical skill, but they have not experience with pregnancy and parturition and they are unable to form an accurate choice of the best method of operation, and hence their performance of these operations is often followed by unsatisfactory results. There will always be needed a sufficient number of obstetricians attached to hospitals throughout the country who can be summoned to these cases whenever the emergency arises.

Obstetric surgery is best performed in a well-appointed maternity hospital. The general hospital has no suitable appliances for resuscitating and caring for the newborn child, nor are its nurses skilled in caring for obstetric cases. In emergencies a

[1]Read before the Medical Society of Orange, N. J., March 14, 1916.

hospital may be improvised in the house of a patient, but the performance of an operation in these surroundings is always attended with greater difficulty and greater risk than in a hospital.

Obstetric surgery should be done with the assistance of trained anesthetizers and helpers who have had experience in this branch of medicine. Patients undergoing delivery by abdominal section have variations in breathing, blood-pressure, and heart action which are not always seen in other cases. Where delivery is effected through the vagina, the problem of the prevention of postpartum hemorrhage at once arises and the obstetric anesthetizer must make this part of his duty.

It may be thought that these precautions—the services of an obstetrician, a maternity hospital, and skilled assistants—are required only for exceptionally complicated and severe cases; but let us take for a moment the most common of all obstetric operations—delivery by forceps. The patient is a primipara, not well developed, whose strength becomes exhausted when the head of the child has reached the pelvic floor but has not rotated. Considerable laceration is inevitable, and there will be more or less weakness or shock accompanying delivery, and postpartum hemorrhage and septic infection may easily begin at this time. Furthermore, if the operation is to be completed successfully, it must leave the mother with her injuries entirely repaired. This must include repair of a torn cervix and both anterior and posterior segments of the pelvic floor. These cases usually require intrauterine packing with iodoform gauze and stimulation to prevent postpartum hemorrhage. The child may be somewhat asphyxiated from birth pressure and will require additional care in resuscitation. To accomplish all this satisfactorily, promptly, safely, and skilfully, the services of the same staff will be needed which are required for delivery by abdominal section.

When the statistics of good maternity hospitals are compared with those obtained in private practice, and the same class of patients in both is subjected to critical study, the results are vastly in favor of the maternity hospital and its trained staff.

Not only do the complications of labor require expert care, but the emergencies of pregnancy are equally important. The toxemia of pregnancy in its wide range from pernicious nausea to eclampsia, or hemorrhages of pregnancy from threatened abortion to accidental separation of a normally implanted placenta or placenta previa, and pregnancy complicated by serious heart lesions or by colon bacillus infection of the kidney, all demand especial care. Can any one deny that these cases will do best under the care of an obstetrician in the hospital and with skilled assistants?

It may be of interest to consider how obstetricians may be trained and how such expert service may be rendered available to the public.

It is a familiar saying that the medical school does not train specialists. Its function is to lay a broad and solid foundation and to give each student the essentials which will make him, in the eyes of the law, a man of average medical knowledge and skill. The field of medicine during his student days is fairly well covered by the instruction which the students receive. Many go through this without manifesting especial aptitude or liking for any one branch of medicine. Some are attracted by the spectacular element in the various branches of surgery, and others by the interest which attaches to laboratory investigation. During the hospital year the student can further extend his experience, and if he has not already made a choice may find himself inclined in one direction. If he is attracted by obstetrics and the diseases of infancy, he should then take especial courses at some large maternity hospital like the Lying-in Charity of New York. He must not only be a student in such a place, but become an assistant and thus gain the practical experience necessary for a competent operator. He may then choose his future home, and from the beginning devote himself to his chosen work.

It cannot be expected that our smaller hospitals will have large and elaborately

equipped maternity wards, but in Pennsylvania the laws of the State now require each hospital to have a maternity service, and throughout the country even the smaller hospitals are making some provision for this purpose. As the population grows more dense, hospital facilities for obstetric work will increase.

But where in all this plan for the advancement of obstetrics does the general practitioner come in? Has he no interests which are rightfully to be considered in this matter? He is the family physician, and is he not then preferred by the mother of the family to be her personal attendant in confinement?

I have been repeatedly told by general practitioners of much experience who have large and lucrative practices that they did not desire obstetric work. The reasons given were that it interferes with general practice; that if a physician has a long and tedious confinement, he cannot during this time do justice to a patient very ill with pneumonia or typhoid; that confinement cases interfere with the office practice, which is so important a part of the work of the general practitioner; and that the general practitioner is not fitted with the necessary instruments, appliances, and assistants to do this work satisfactorily to himself and advantageously to the patient. Furthermore, it is, I believe, a general rule in medicine that a man will be truly successful only in that work which he does thoroughly and persistently well. It is true that a general practitioner may conduct a number of normal confinements successfully, and then meet an emergency or abnormality which may result in disaster and cause him loss and censure. For these reasons I believe that it is the opinion of certainly many general practitioners that they do not want obstetric work, but obstetric work will come to them to some extent inevitably. They will often be called upon to diagnosticate pregnancy, to treat threatened abortion, to treat the beginning of toxemia, and often to conduct labor. In beginning practice a physician may not be able to decline this work, and he may feel obliged in order to build up a practice to take this responsibility.

There is one field of medicine which belongs more than any other to the general practitioner, and that is the field of diagnosis. This is true throughout his entire work. It is to the family physician that the patient first tells the symptoms of cataract, cancer, abdominal tumor, serious disease of the viscera, disorders of the nervous system, and pregnancy and its complications. His field of diagnosis embraces practically all medicine. He is greatly to be envied in this, for his constant study of diagnosis should make him broad-minded, keen to observe, accurate in memory, and wise in decision. The specialist may well envy him in his specialty, that of diagnosis.

In no branch of medicine is diagnosis more important than in obstetrics. Accurate diagnosis at present constantly calls upon the laboratory, and the general practitioner to be successful must have access to a laboratory or must improvise one in his own home. He must be familiar with the ordinary microscopic work and possess the necessary outfit to make the most valuable clinical tests. If he is equipped with a modern education, the general practitioner will measure the patient's pelvis in her first pregnancy and early detect any abnormality in the size and shape of the pelvis. He will recognize altered pulse tension and other signs of toxemia of pregnancy. He will diagnosticate colon bacillus infection of the kidney during pregnancy, and also appendicitis. The diagnosis made, he will refer the patient to a hospital where appropriate treatment can be procured.

If one observes closely his patients, he must be impressed with the fact that they appreciate a thorough examination and an accurate diagnosis. So the general practitioner in his specialty of diagnosis is by no means overshadowed by the operator. The patients realize that but for his thorough and careful study and wise decision both mother and child might have been in great danger. There is no fear that such a physician will lose the household practice of the family, but the mother will return to

him convalescent and with increased faith in his ability and judgment.

Let us remember in this discussion that we are living in a thickly settled portion of our country, and that you, as citizens of New Jersey, are favored with excellent roads. We must also remember that in this part of the country there are many hospitals, and that it is rare to find a locality from which a patient cannot be quickly transported to a hospital. The motor car, whether it be ambulance or the ordinary car, has greatly increased the efficiency of our hospitals. Patients in labor can be transported to hospitals quickly, safely, and without injury to mother or child. It would seem then that certainly in this locality the conditions are favorable for obtaining for parturient women the advantages of skilled service and hospital care; but what shall we say of those parts of the country where hospitals are comparatively few, where roads are bad, where the foreign population insists upon midwives, where there are few obstetricians? Must the general practitioner still assume the responsibility of obstetric surgery?

We scarcely realize, until our attention is called to it, the number of medical men in America who have had hospital training who are competent in various branches of surgery. We are all familiar with the American College of Surgeons and recognize it as a splendid institution, and yet one's first impression may be that he had no idea that there were so many surgeons in America. These men have been selected after careful test, and they are unquestionably entitled to their position. Their number is not in proportion as great as that of the members of the Royal College of Surgeons of England, yet we have an enormous country in extent and a large population.

So in obstetrics, while the majority of each graduating class may remain general practitioners or go into other specialties, there is an increasing number of recently trained men who are becoming obstetricians. So hospitals are steadily increasing throughout the country, and it will not be long before it will be the exception and not the rule that obstetric surgery cannot readily be done in suitable hospitals. There is no place for the midwife in a highly civilized country where the medical profession has its full rights and privileges and where obstetric practice is properly conducted.

There is another modern and most interesting field for the general practitioner in the practical application of the science of hygiene. He is the guardian of the homes of his patients; he is the man to be on boards of health, on school boards, on commissions which have to do with the sanitation of artisans, with questions of immigration, and other matters concerning the public health. He also is the modern exponent of sociology, and he it is who will have the most use of the social service worker, who is a modern recruit in the ranks of medicine. His, too, will be the care of food supply or pure water and other matters important for the general welfare. His best success in medicine will lie in the care of health and the prevention of disease rather than in operative work or special lines of treatment.

In obstetrics he will not only be proficient in diagnosis, but in the knowledge of the mechanism of normal labor and the physiology and pathology of pregnancy, labor, and the puerperal state. One of the most important diagnoses that he will ever make will be the fact that the fetal head has not engaged after suitable pains in the mother's pelvis. Failure to make this diagnosis has caused more obstetric tragedies than any other one element in obstetric practice. He will recognize the gravity of a sudden, bright hemorrhage from the vagina in a woman pregnant, near term, and his recognition of placenta previa will result in the saving of the lives of mother and child. He will readily detect the fallacy in such a trade imposition as "twilight sleep" and warn his patients against it. His knowledge of normal labor will prevent him from using pituitrin improperly, and he will thus save the lives of many infants.

It may be of interest to ask the results of obstetric surgery in dealing with the more important complications of pregnancy and parturition. I have taken from my records

of personal experience 200 cases all delivered by various forms of abdominal section. Of these 200, 120 were the classic Cæsarian section, whereby the child was delivered and the mother left capable of further procreation. In 47 cases there was sufficient reason for sterilization, but septic infection was not present, and hence hysterectomy was performed and the stump dropped and the abdomen closed without drainage. In 28 cases there was sufficient reason for sterilization, but septic infection was present. The body of the uterus was removed and the stump fastened in the lower end of the abdominal incision with a clamp by Porro's method. In three cases extirpation of the uterus was performed, and in two the patient was moribund and practically a post-mortem Cæsarian was done.

The indications for operation cover essentially the field of obstetric pathology—contracted pelvis, disproportion, toxemia, nephritis, eclampsia, valvular disease of the heart, pelvic tumor, tuberculosis, placenta previa, transverse position with impacted fetus, prolapse of the cord, impacted fetus, septic infection, and rupture of the uterus. Naturally the greater number of cases were those of disproportion or pelvic deformity.

These cases may be divided into those that were clean so far as septic infection was concerned and in good general condition, and those that were unclean or in poor condition. Of the former clean cases there were 140, with one death. In this we found peritonitis, caused by the bacillus proteus vulgaris. We examined bacteriologically samples of catgut, dressings, suture material, and made other tests, but could not find the origin of the infection. This series of favorable cases gives a maternal mortality of .071 per cent.

There were 55 cases complicated by toxemia in its various forms, including eclampsia and nephritis; by pulmonary tuberculosis, pneumonia, placenta previa, heart lesions, and degenerative conditions in the abdominal and thoracic viscera. The mortality among these was 15, and it may be interesting to observe that 22 cases of placenta previa had no maternal death, and that the deaths from puerperal septic infection were but five in number. The greater mortality resulted from toxemia and from degenerative diseases of the thoracic and abdominal viscera, and from the acute pulmonary infections, pneumonia and tuberculosis. Since we have made a rule to treat all septic cases by the Porro method, our deaths from septic infection after delivery by abdominal section have been reduced to a very small percentage. We ascribe these results to the fact that the body of the uterus is removed and that the stump is outside the peritoneal cavity. As an added precaution, I ligate the ovarian and round ligament arteries separately, thus preventing with the firm pressure of the clamp the passage of septic matter from the uterus into the circulation.

You may be interested in the treatment of placenta previa by abdominal section, and of this I am a decided advocate. Since completing this series of 200 cases I have had others, among whom are two cases of placenta previa, thus bringing the total up to 24 without maternal death. Some of these were exsanguinated, suffering from shock, and in a critical condition. We have entirely abandoned the use of the vaginal tampon in placenta previa, but if a considerable portion of the membranes is available through the vagina we may rupture the membranes freely and give tonic doses of strychnia. This will result in good uterine contractions, stop the bleeding by forcing the fetus against the placenta, and ultimately lead to delivery. Unless, however, a considerable portion of the membranes is available, we treat placenta previa by section.

In this series there were three cases of extirpation of the uterus: one at five months for scar tissue in the cervix, separation of the normal placenta, hemorrhage, and infection; one for carcinoma of the cervix complicating pregnancy; and one for pregnancy complicated by ovarian tumor, placenta previa, transverse position of the child, prolapse of a loop of the cord. The pregnancy was an early one. Of these three mothers, two lived and one died.

There were as stated two moribund cases

from toxemia and eclampsia, in whom abdominal section was done to save the child. The total maternal mortality of the series is 7.5 per cent, a result which compares very favorably with the statistics given by large clinics of the mortality of vaginal delivery for the same complications.

In this work we have confined ourselves to the classic Cæsarian section, to hysterectomy, and to the Porro operation. We have not used suprasymphyseal section, extraperitoneal, laparo-elytrotomy, or delivery through peritoneal fistula. Obviously vaginal Cæsarian section is not delivery by abdominal section, and hence no case of that sort is included in this series.

DIAGNOSIS AND TREATMENT OF CHRONIC GONORRHEA.

BY J. W. MILLER, M.D., CINCINNATI.

Many causes tend to prolong a chronic gonorrhea. The extension of the inflammation to the posterior urethra, with consequent infection of the prostate, is the most common cause. An inflammation involving either the prostatic ducts, an involvement of the seminal vesicles, or an epididymitis, is found in nearly all cases of long standing. Under favorable conditions any one of these foci may reinfect the mucous membrane of the posterior urethra, which accounts for the relapsing and obstinate cases we so frequently see. After the second month, when painful symptoms have passed, and free discharge has ceased, the patient is likely to think himself cured—at any rate to return to his old habits as to drink, diet, and excessive exercise. This causes a rekindling of the old process, which in its obscure location has not been thoroughly attacked. The inflammation is now no longer diffuse, but is localized in one or more small circumscribed areas, either anterior or posterior to the cut-off muscle. If anterior the principal inflammatory changes occur in the glands of Littre, especially in the region of the bulb. When a chronic posterior urethritis exists we generally find in addition a prostatic or vesicular involvement, occasionally an epididymitis, rarely a cystitis. The rich glandular tissue of the prostate, especially in the region of the caput gallinaginis, is very prone to chronic inflammatory changes giving rise to desquamative or purulent catarrh.

A chronic gonorrhea is said to begin with the first deposit of connective tissue fibers in the patchy cellular infiltrate of acute gonorrhea. The gross changes may be superficial or deep (subepithelial). Oberländer divides infiltration of chronic gonorrhea into two main groups: (*a*) soft infiltration, (*b*) hard infiltration, according to the stage to which the deposition of connective has advanced. We may then consider every case of chronic gonorrhea a case of stricture. Soft infiltrations do not produce any appreciable narrowing of the urethra, while hard infiltrations are true strictures as we clinically understand the term, and produce a decided narrowing of the urethra.

There is no sharp line to be drawn between the morbid processes observable in the acute and chronic forms of the disease, the one form merging imperceptibly into the other. In the early stage the discharge is usually profuse. As the inflammation becomes localized to one or more spots in the urethra the discharge lessens in amount, and passes from a purulent condition to a thin, clear mucus, just sufficient to stick the lips of the meatus together. The urine is more or less cloudy and seldom fails to show the presence of gonorrhea threads.

CHRONIC ANTERIOR URETHRITIS.

The most noticeable symptom is the well-known bead of purulent secretion which is found at the meatus on waking in the morning. The "drop" forms over night (as the canal usually is not washed with urine for seven or eight hours). The amount of discharge during the day is just sufficient to cause a gluing of the meatus, frequent urin-

ation washing away the greater part that accumulates. Generally the two-glass test shows: urine No. 1 cloudy, No. 2 clear. This appearance of the urine depends largely on the degree of inflammation—if fairly recent, cloudy; if of long standing the urine will be quite clear and free from mucus and pus, but will show threads floating in it. By the clinical history and instrumental examination we determine whether we have to deal with the condition spoken of as soft infiltration. A characteristic feature of these cases is the fact that the lapse of time since the original infection is a very short one, usually only a few months. However, we are not justified in making a diagnosis of the character of the urethral infection before an instrumental examination is made. Narrowing of the urethra is not a prominent part of this form of infiltration. With a bougie à boule, steel or black gum, selecting as large a size as the meatus will admit (performing a meatotomy if necessary), we lubricate the instrument, and gently pass down the whole length of the urethra, noting sensitive spots as the head of the bougie passes over an inflamed area; a twinge of pain is often felt by the patient, which ceases as soon as the head passes beyond the spot, but is felt again as the head passes over it when the instrument is being withdrawn. The practiced hand soon learns to detect even the slightest changes from the normal. This procedure may cause slight bleeding. The passage of the bougie proves the absence of any decided stricture.

To recapitulate, in soft infiltration, or stricture of large caliber, we have, first, a history of gluing of the meatus and lapse of time (usually short) since the original infection; second, character of urine, which may be slightly cloudy, or clear, containing urethral threads; third, examination with bougie shows no decided narrowing, but may elicit roughness, sensitive spots, and cause slight bleeding. If you care to go into the diagnosis more carefully, and determine the degree of contraction, a Kollman urethrometer is an excellent instrument for the purpose. This instrument, when introduced, can be expanded at will, the degree of expansion being indicated by a pointer on the dial. The dilatability of the normal urethra in its various divisions must be borne in mind. Carefully compare the amount of dilatation which the urethra will admit with its normal dilatability, and a very good idea of the extent and depth of the inflammation can be arrived at. As a rule the use of this instrument can be left to those who devote most of their time to urinary diseases. The endoscope is sometimes used, but in the opinion of Casper and other authorities it is of value for diagnostic purposes in a few selected cases only. The writer dissents from this view, and agrees with Wassidlo, that the urethroscope is of great value for diagnosing and treating infections of the urinary tract. A simple and at the same time a valuable method of detecting an involvement of Littre's glands is to pass a large-size steel sound, and feel over the sound the infected glands, which give one the sensation of fine shot deep within the tissue.

CHRONIC POSTERIOR URETHRITIS.

Here as in chronic anterior urethritis the disease is often unnoticed by the patient. Pain or appreciable secretion may be absent, but more often pain, local or reflex in character, will be complained of, and if discharge is not noticeable an examination of the urine will show cloudiness or clap shreds. A history of the case and rectal palpation seeking for prostatic or vesicular involvement is always necessary in endeavoring to make a correct diagnosis. As in chronic anterior inflammation, if the condition be fairly recent, the urine will be cloudy from the presence of mucus or pus, and floating in it will be seen numerous urethral threads. If of long standing "tripper faden" floating in clear urine will be observed. It is best to carefully wash the anterior urethra before collecting urine. Make a microscopial examination of the discharge and threads. We will find shreds to be composed chiefly of pus. Gonococci may or may not be present. Rule out all chronic urethral discharges, as urethror-

rhea, bacteriuria, prostatorrhea, and spermatorrhea. Urethrorrhea follows on overactivity of the urethral glands and often a chronic urethritis due to too much local treatment. Microscopically the discharge is made up of mucus and epithelial cells. Discontinuing local measures and instituting means to tone up the general health will generally correct this condition. Bacteriuria, characterized by a very cloudy urine, sometimes even a slight discharge, microscopically shows swarms of bacilli, usually the colon bacillus. The discharge will often disappear after a few strong antiseptic injections.

Some cases of bacteriuria we meet with are extremely obstinate. In these obstinate cases vaccine therapy has recently been highly praised. Prostatorrhea and spermatorrhea are seen mostly after defecation or urination, and are due to squeezing out the secretion from the prostatic ducts or seminal vesicles during the end of the act of defecation or urination by the intra- and periprostatic muscles. It may also appear during sexual excitement. Microscopically it contains the normal elements from the prostate and seminal vesicles.

To sum up diagnostic points: First, obtain a good history; second, make a careful microscopical examination of the discharge and urine; third, rectal palpation of the prostate and seminal vesicles must never be omitted. One should be familiar with the size and feel of the normal and the pathological prostate. Finger and Frank believe that the prostate is involved in every case of chronic posterior urethritis. The prostatic secretion is obtained by expression, making firm pressure per rectum. A drop will flow directly from the meatus on a slide, which is held in position for the purpose. Examination is made of the fresh specimen, also of a specimen fixed and properly stained.

Seminal vesiculitis is often associated with prostatitis. Symptoms: In chronic posterior urethritis a history of frequent exacerbations is nearly always elicited, or referred symptoms may be complained of. The physiological function of the prostate is a sexual one, and it is common to find sexual disturbances resulting from disease of the gland. Anatomically it is closely related to the bladder and urethra, therefore we can expect bladder and urinary symptoms. A frequent desire to micturate, often associated with pain and burning, during and after the act is a common urinary symptom. The sexual complaints are partial or total loss of power for erections, premature ejaculations, and loss of sexual desire. Referred symptoms of pain are very frequent. Examination of urine will show presence of comma shreds, squeezed out by the intra- and periprostatic muscles. The expressed secretion shows pus cells in excess. After a careful search gonococci may be found.

TREATMENT OF ANTERIOR URETHRITIS.

In recent cases (subacute) merging into a chronic condition our first aim is to subdue the general catarrhal condition. To effect this irrigation is suggested. It is best to select that method which causes the patient the least discomfort. The Janet method, popularized in this country by Valentine and sometimes referred to as the Valentine method, is accomplished by gradually increasing the pressure of the fluid injected at the meatus by means of the irrigator, until it is sufficient to overcome the spasm of the compressor urethræ. An irrigation may be given in the sitting or standing position. It is well for the first few irrigations, on account of fear and tendency of nervous patients to faint, to allow the patient to sit on the edge of a chair, holding a small-size enamel basin, into which is received the washings. A blunt-pointed glass nozzle, from which air has been expelled, is gently introduced into the meatus. Depending on whether we wish to irrigate the anterior or posterior uretha will govern us in regard to the force of the stream. For anterior irrigation, in order not to force cut-off muscle, we regulate our flow accordingly. A slow, sluggish stream is always best to use in the beginning, as a routine, in order not to frighten the patient and also to slowly fill the anterior urethra, until bal-

looning occurs; then remove nozzle, and allow escape of fluid. This technique is also to precede posterior irrigation, in order not to wash back any inflammatory products which may be present. Now, having washed out the anterior urethra thoroughly, and becoming acquainted with capacity of urethra and sensitiveness of the patient, we get a firm grasp on the penis and completely occlude the meatus, and allow from eight to ten ounces of solution to enter the bladder, or just enough to cause a slight desire to urinate, which in some patients may be as little as one or two ounces. You may have some trouble in overcoming the cut-off muscle. This can usually be overcome by instructing the patient to throw the head and shoulders back and to breathe deeply, at the same time telling him to urinate. If the least trouble is experienced, it is necessary to introduce one-half ounce of cocaine hydrochlorate, three-fourths of one-per-cent solution, retaining for five minutes. I never hesitate to use this solution, knowing how easy it is to injure the delicate mucous membrane by trying to force the cut-off muscle.

The drugs used in making solutions for irrigating depend largely upon the case. Potassium permanganate is most useful. It can be introduced as a hot solution, as can also silver nitrate, in strengths varying from 1:10,000 to 1:2000. If we find gonococci present in shreds or prostatic secretion irrigations of protargal (cold) or albargin (hot) are to be preferred. The strength generally employed is one part in one thousand. Oxycyanide of mercury, in the strength of 1:4000, is useful in non-specific urethritis. The patient is irrigated every day in the beginning, later two or three times a week.

Internal treatment is of little value in these conditions. Salol or hexamethylenamine may be given in cases of mixed infection. For circumscribed areas found by the endoscope or palpation with bougie, that refuse to heal by ordinary methods, much can be done by applying an astringent directly to the affected spots. There is no better instrument for this purpose than the urethroscope. Having carefully exposed the inflamed area, a solution of silver nitrate 1 to 10 per cent may be applied by means of an applicator.

Discharge Dependent upon Strictures.—As above mentioned we may have strictures of such wide caliber that they occasion none of the classical characteristic symptoms of stricture, yet unless they are recognized and the proper treatment instituted the condition will never be corrected. Having diagnosed a narrowing of the urethra the rational treatment is gradual dilatation, if permanency of cure in our cases of chronic gonorrhea is to be looked for.

TREATMENT OF POSTERIOR URETHRITIS.

Of great importance from a therapeutic standpoint is that portion of the genito-urinary tract which is most commonly the cause of perpetuation and rekindling of chronic urethral discharges. A chronic posterior urethritis without prostatic or vesicular involvement is comparatively a rare condition. When such cases are met with, however, the best results are obtained by hot irrigations and high dilatation, using a Kollman or Frank dilator, remembering that the value of dilatation of the urethra in assisting in the absorption of an induration has long been recognized. The passage of a sound is usually inadequate. To obtain full benefit in the treatment the dilatation must be carried out on a rational and systematic plan. The dilatation must be very gradual, not more than one millimeter at a sitting, and must be stopped immediately it occasions pain; it should not as a rule give rise to bleeding. After an interval of five or seven days, when all reaction has died down, the dilatation may be carried to a fuller degree. After each dilatation the urethra must be irrigated with a dilute antiseptic solution such as oxycyanide of mercury 1:4000. The pressure and dilatation not only assists absorption of the inflammatory induration, but it squeezes out the contents of the urethral glands, and liberates any gonococci which may be lurking there. The beneficial effect of dilatation

and irrigation is seen in the clearing up of the urine through the disapperance of the cloud of mucus and the diminution in the number and size of threads.

Discharge Dependent upon the Prostatitis.—Should the symptoms point to the prostate being involved, this gland should be gently massaged two or three times a week. The operator's finger is covered with a rubber cot and well anointed with vaselin. A convenient and satisfactory position for the patient is to have him bend over the office table, with his head resting upon his forearm, telling him to relax as much as possible. The finger is then pushed into the rectum. Starting at the external part of the lateral lobe the massaging finger-tip works its way toward the median line of the gland, carried to the external border immediately below the previous path of massage, and again worked toward the center. This is continued until each lateral lobe has been thoroughly gone over. At first the sittings must be very short; later digitization may be prolonged from two to five minutes.

Instillation.—When the urine is quite free from mucus and only shows the presence of urethral threads, a stronger solution may occasionally be applied, preferably lactate of copper. A two-per-cent solution in glycerin introduced by means of an Ultzmann syringe answers admirably. Silver nitrate solutions in the strength of from one to ten per cent are also used. It is my custom when using strong silver solutions to always employ the endoscope. The Valentine straight instrument may be used or, what I prefer, the curved urethroscope of Swinburn. The most marked area of inflammation will often be found in region of the caput. The direct application is a much more scientific procedure; besides, better and quicker results are noted.

Vesiculitis, although an extension of the gonorrheal inflammation to the vesicles, occurs less often than either extension to prostate or epididymis; it certainly complicates these cases more frequently than is commonly supposed. The diagnosis is made by rectal palpation; there is no characteristic symptom of this affection. After you have palpated the upper portion of the prostate, make counter-pressure with the other hand over the pubic region. If there is any enlargement or induration of the seminal vesicles, it will readily be detected by the experienced finger. Stripping the vesicles is indicated if inflammation is present. The diagnosis of epididymitis is so easily made that I will merely mention it as a factor occasionally causing the production or persistence of a chronic urethral discharge.

THE BERKSHIRE, 628 ELM STREET.

THE RELATION OF BLADDER TUMORS TO THE CANCER PROBLEM.

BY ALEXANDER RANDALL, M.A., M.D., PHILADELPHIA.

While thinking over the complexities and results of a case of bladder tumor the following thoughts formulated themselves into a concrete idea. I have attempted to express this idea in what follows, in the order and way of its occurence, so that the weight of it may reach the reader as the idea did me.

From the observations of surgeons it has been demonstrated that the majority of all vesical neoplasms, when first seen, are of the benign papillomatous type—a tumor which microscopically shows no evidence of malignancy.

In 1910 Beer first brought to medical attention the efficacy of the electric spark of a high-frequency coil, and the methods by which it may be used, to cause the destruction (fulguration, desiccation, electro-coagulation) of such benign growths, while the subsequent evidence of the past five years has demonstrated that by these means a cure can be definitely established. A method simple of application.

The past experience of surgeons in operating upon such cases of benign vesical papilloma by removal with the knife has been wofully disappointing, recurrence of

the growth arising in over one-half of the cases, not only at the original seat of the lesion, but frequently almost as though a stimulus had been given, causing the entire vesical cavity to become proliferative of papillary outgrowths. These recurrences absolutely and invariably become in time malignant neoplasms, causing subsequent death; microscopically they are of the carcinomatous type of growth.

The universality of the malignant tendency of the benign vesical papilloma has become so recognized that this tumor is now considered by urological surgeons and pathologists as potentially a malignant growth. Unless early destroyed it can be counted upon to ultimately show malignant characteristics, and cause death. It is likewise claimed that upward of 50 per cent of the vesical carcinomas are due to malignant changes in benign growths.

The length of time of benignancy is not known, nor can it be expected to be constant. Whether all vesical carcinomata are in their infancy benign papillomata or not, likewise is not known; probably a very small percentage are malignant from their incipiency, or are metastatic, but certain it is that the largest percentage are malignant degenerations in originally benign papillomata.

To-day the American medical profession is striving to understand cancer and to reduce its increasing ravages. These three facts relative to bladder tumor stand out in the midst of our accumulated knowledge as being almost axiomatic:

First, the great majority of all vesical tumors are in their incipiency of a benign nature.

Second, high-frequency electricity can remove such growths and has given a high percentage of permanent cures.

Third, the benign vesical papilloma is ultimately and potentially a malignant growth and should be so considered.

Therefore from these truths let it be recognized that in this benign tumor is seen a definite precancerous stage. And in our efforts at cancer eradication let us appreciate that, at least in this type of tumor, an early recognition of the condition will mean its almost complete extermination.

1831 Chestnut Street.

CLINICAL EXPERIENCES WITH COAGULOSE IN CASES OF HEMORRHAGE.

Rain in the *Southern Practitioner* for December, 1915, says that we are all aware of the fact that the application of a foreign blood, such as might be obtained from an animal or another human being, when applied to an oozing surface, frequently causes a more or less prompt cessation of the bleeding. It is therefore a rational procedure to obtain a serum or a preparation from normal blood that will contain sufficient ferment. Such a preparation is coagulose. This product is a sterile, soluble, anhydrous powder, and contains the fibrin ferment necessary to cause clotting of the blood. It is obtained from normal blood serum and is readily soluble in cold water at concentrations two or three times that of the original serum. It retains its efficiency unimpaired for a great length of time, as 0.65 gramme of desiccated powder, equivalent to 10 Cc. of the blood serum when mixed with 6 to 8 Cc. sterile water, is supplied in 15-Cc. glass bulbs. Rain's experience with coagulose is not confined to cases in which a deficient fibrin ferment was believed to be at fault, but to cases also in which an open ulcer was the cause of the hemorrhage, such as the bleeding in typhoid fever. He reports these cases:

Case 1.—Aged fifty, housewife. Family history negative. Present trouble (severe epistaxis) began about six months ago; a continuous oozing for the past three months. Had been treated by specialist during this time, he stating that he could find no cause for hemorrhage. Relief was only temporary, and after three office consultations the case was referred to Rain. Physical examination proved negative, except for secondary anemia due to loss of blood. Blood-pressure and urine negative. This hemorrhage could not be accounted for in any other way than that her blood lacked in coagulating element.

The treatment consisted in giving one dose of coagulose each day for four days. An appreciable change was seen after the first dose and before the administration of the second dose, the day following, as oozing was diminished in amount, judging from the number of soiled handkerchiefs, as well as the color of them. Each day showed improvement, and on the day of the fourth administration the hemorrhage had entirely ceased. Each dose was administered early in the morning. Four doses in all were administered. The result was most gratifying.

It is now over a year from the time that this case was treated, and there has not been a return of the above symptom. The patient is well and hearty.

Case 2.—Male, aged eighteen, the son of the last-named patient. The family history is negative, except mother had severe epistaxis about eight months ago.

Moderately severe epistaxis of about two weeks' standing. All methods of local treatment to nasal mucous membrane had failed, at least in part. On account of the happy result obtained by his mother, he came to consult Rain about his nose bleeding.

He was given two doses of coagulose on successive days. The bleeding ceased after the first dose.

This case proves interesting because of the age of the patient and because of the mother's history. Neither had ever had nosebleed before. A clear history of hemophilia could not be obtained in the boy. It is interesting to note that these two cases of hemorrhage occurred about the same time, only eight months intervening. It is also interesting to note that ordinary styptics failed; the blood would not coagulate.

Rain says that the happy result in these two cases certainly speaks well for coagulose.

The patient was asked to report if he ever had any bleeding from any membranes again. So far such has not been reported, a period of almost seven months.

Case 3.—Male, aged twenty. Trouble began about one week ago, with headache, temperature 101°, pulse 84. No other symptoms noted at this time. Temperature was watched daily. With morning remissions, temperature gradually reached the height of 105° at the end of one week. At this time the Widal reaction proved positive. Temperature remained at 105° three days, then became 103 4/5°. The patient did well considering severe typhoid toxemia until about second or third day of the third week, when he suddenly began having hemorrhages, fifteen in all, within three days. Case was despaired of, and though he reacted after each hemorrhage, Rain was at a severe loss to state what would be the outcome. Naturally his prognosis was very grave. Blood-pressure had not been taken throughout this case nor at the time of any of the above hemorrhages. At the time the first dose of coagulose was administered the pulse was very rapid and thready, and could not be successfully counted. The patient was extremely restless; the entire surface of the body was bathed with cold sweat. Profound anemia was marked, though no blood was taken for hemoglobin estimation. Lips, mucous membrane, and ears were profoundly cyanotic. Six doses of coagulose were given within two days—four for the first day, and two the second. No other treatment except elevation of the foot of the bed, ice-bag as usual to the abdomen, and saline infusion under the breasts. There was no other evidence of active hemorrhage, as far as he could ascertain. The blood-pressure was taken the following morning, and much to Rain's surprise was found to be 80. The patient had reacted; the temperature had become lower than at any time before, registering 102°, pulse 136, respiration 24. The blood-pressure a week later was 110. The patient recovered.

This case was seen with Rain by various consultants, and they all felt it was hopeless. However, to set at rest the minds of the parents, coagulose was suggested, and was administered as above stated.

The first two hemorrhages of this group were unusually severe. The other was probably less so, as symptoms were not so severe or as marked after the first two hemorrhages.

EDITORIAL.

IMMUNIZED MILK AS A PREVENTIVE AND CURE IN TUBERCULOSIS.

It is not many years since the introduction of tuberculin for the purpose of testing milch cows in order to determine whether their milk was suitable for human use. Now it is universally recognized that no milk should be taken by a human being that does not come from cows which have been subjected to the tuberculin test, and in many States the law requires that all milch cattle shall be tested with tuberculin at regular intervals. At the present time the question which arises is whether we should not go one step further and, by the use of tuberculin in milch cattle, endeavor to produce an artificial immunity to tuberculosis, not only in the cow, but in the person who ingests the milk, the animal transferring her immunizing bodies to the recipient. The hope has been expressed that not only should human beings be, at least in part, immunized against tuberculosis, but that in certain cases of actual tuberculosis the use of such immunized milk might produce curative results. Of course, this brings us face to face with the problem of the difference between bovine and human tuberculosis. It has been pretty well determined that bovine tuberculosis is quite capable of affecting man, but, so far as we are aware, the question naturally arises as to whether the tuberculin used in milch cattle should be obtained from bovine bacilli or human bacilli.

An interesting article dealing with this important matter has been contributed to the *New York Medical Record* of November 27, 1915, by Rosenberg, who is an enthusiastic advocate of the plan of immunization and urges the profession to assist him. He claims, first of all, after taking statistics throughout the world, and especially in the United States, that the death-rate from pulmonary tuberculosis continues unchanged, although there is a decline in a few cities, and that the sickness and mortality of other types of tuberculosis, as, for example, in the glands, bones, and joints, and among children, have increased. As it is not our object to discuss this aspect of tuberculosis we do not quote his statistics. The point that Rosenberg wishes to insist upon is that, while we are doing much for the relief of the tuberculous and something towards the prevention of this disease, we are not protecting individuals from the tuberculosis which comes to man from animals as carefully as we are protecting him from that which comes from man, for it is to be remembered that so-called "certified milk" certifies to the quality of the milk as a food rather than as a bacteria-free substance, and that butter and even cheese sometimes contain tubercle bacilli. Rosenberg goes one step further and claims that while pasteurized milk may be better than ordinary milk it is not sterile and does not guarantee safety against infection.

As is known to many of our readers, Gilliland has apparently succeeded in inducing immunity in cattle against tuberculosis, and others have followed in his footsteps. In other words, we are apparently approaching the time when healthy cattle are to be vaccinated against tuberculosis. Rosenberg states that in experiments carried out under the direction of Dr. William H. Park, than whom no one is more reliable, it was found that inoculation with dead cultures of tubercle bacillus induced the formation of specific antibodies in the blood and milk, and that feeding the milk of cattle possessing such antibodies produced antibodies in turn in the blood of the recipient, although this blood did not contain them before such feeding.

Where it is difficult for individuals to keep cows Rosenberg suggests that immunized goats be kept for private supply, and adds that immunized milk is now being used in a number of tuberculosis institutions with reported good results. If these promises hold true an immense advance in the

war against tuberculosis has been made. The proposition is not at all impossible from the commercial standpoint, since the method of immunization is not difficult and does not add very materially to the cost. The technique of immunization is that of the ordinary use of tuberculin to determine that the animal is free from tuberculosis. This is followed by the injection of B. E. tuberculin, that is, bacillary emulsion. Rosenberg thinks that some immunity may be obtained by three or four subcutaneous injections, but where it is desired that antibodies shall be present in the milk, he advises 15 injections at weekly intervals with increased doses of vaccine, and after this a dose every two or three weeks. He even goes so far as to express the belief that immunized milk combines the effects of protective vaccination in smallpox and of serum therapy for diphtheria. He adds, very wisely, that farms and dairies will supply immunized milk if it is demanded, and that immunized milk will be demanded if physicians recommend and demand it.

CERTAIN POINTS CONCERNING ANESTHESIA.

Although no department of medical literature, unless it be that dealing with cancer and tuberculosis, has a larger literature than that of anesthesia, it would seem that for many years to come it will remain one of the chief topics for discussion on the part of physicians and surgeons. Almost every year brings forward facts which taken together are of the greatest importance, these facts being developed in the laboratory or at the bedside.

The difficulty of accepting at their face value all laboratory reports lies in the fact that different animals respond to anesthetics in different ways; that all of them respond with a difference in degree, if not in kind, from the response made by man; and, finally, that the experimenter in the laboratory uses a healthy animal, whereas, in a large number of cases, in human beings the recipient is not in a state of health. This does not in any way militate against the value of laboratory experiments. It only serves to make us cautious in their too rigid application to man.

One of the most rational experimenters who has done noteworthy work with anesthetics is Embley, who recently has discussed the relationship between ventricular fibrillation and chloroform syncope. Here is an instance in which it is evident that different animals have different susceptibilities, since cats very frequently have ventricular fibrillation when under chloroform, whereas dogs rarely do so. The result of Embley's work upon animals leads him to believe that there is much truth in the view that the period of induction of anesthesia with chloroform is a period of greatest danger. On the other hand, it will be most unwise, as Blumfeld states, to believe that safety is to be found in a deep degree of narcosis. Much safety can be obtained by mental assurance of the patient, a proper posture, the gradual induction of anesthesia, and in the preliminary use of atropine.

We do not think, however, that the general run of American or British practitioners will agree with the views of Crile and Buetler to the effect that "chloroform throughout is the anesthetic of choice for chronic alcoholics in fair condition," or that "oil-ether-colonic anesthesia is indicated for the very obese." It has certainly been the experience of the profession, up to this time, that chronic alcoholics are always bad subjects, and particularly so for chloroform.

Concerning the method of administering ether by rebreathing, we are glad to see that Blumfeld, in an article in the *London Practitioner* for December, 1915, points out that there is always a difficulty of insuring real cleanliness of the bags employed, and also he claims that it is generally admitted that vomiting, intestinal paresis, and pain are less apt to occur after the open method of using ether than when the closed methods are resorted to.

Concerning so-called "twilight sleep" for surgical purposes, Blumfeld quotes Brenzier as emphasizing the importance of using a freshly prepared solution of scopolamine,

and quotes the wise statement of another author that "unless continued observation of the patient in 'twilight sleep' is carried out by some one accustomed to the technique it is better not to employ the method at all." This, we believe, is the view which is at the present time generally accepted; it certainly seems to be the opinion of obstetricians who have used so-called "twilight sleep" sufficiently to be able to speak with authority. The profession in general have been slow to take up "twilight sleep" in obstetrics, and still more cautious in regard to its employment in general surgery.

THE DANGER OF TETANUS IN OPERATIVE CASES.

Tetanus is so rarely met with, except as a result of some accident, that the physician is often misled in his diagnosis in the early stages of the disease, since the law of probability tends to make him exclude this important malady. In two instances with which we are familiar a diagnosis of hysteria was made and adhered to until the disease was so well developed that it could not be mistaken for anything else but tetanus and until the use of antitoxin was necessarily futile. One of these cases developed in an adult male some days after an operation for hemorrhoids, and as the operation had been done by a competent surgeon under the strictest asepsis, the possibility of tetanus infection at the site of the operation was excluded, with disastrous results. The fact that the spores of tetanus can be swallowed with uncooked foods and exist in a harmless state in the alimentary canal, unless they find some solution of continuity in the mucous membrane, is not as generally recognized as it should be. When we stop to think how prevalent tetanus bacilli and their spores are in garden soil, and how many opportunities exist for their entrance into the body when various vegetables are eaten in a raw state, as, for example, cabbage, lettuce, and celery, it is surprising that cases of infection by way of the alimentary canal have so rarely occurred.

In the *Virginia Medical Semi-Monthly* of July 23, 1915, Atkinson reported another case of postoperative tetanus, the patient having been subjected, under careful antiseptic precautions, to an operation for hemorrhoids. The patient did well until the evening of the sixth day, when he complained that his jaws were a little tender, and, on the seventh day, that his neck was uncomfortable, so that it was rubbed and massaged. In the afternoon of the seventh day he had difficulty in opening his mouth. A diagnosis of tetanus was promptly made and antitoxin given hypodermically and intraspinally, so that within thirty-six hours he received 20,000 units. Morphine and chloretone were also used, and recovery eventually occurred. An examination of the catgut which was used in the operation showed that the infection did not occur through its contamination.

Atkinson calls attention to the paper of Matas which was presented to the American Surgical Association in 1909, and which dealt with this important subject under the title of "The Fecal Origin of Some Forms of Postoperative Tetanus," and quotes statistics to show that five per cent of all normal men harbor tetanus bacilli or their spores in an active state in the intestinal canal, and that this percentage is increased to twenty per cent in stablemen, dairymen, and others who are in contact with horses and barn-yards.

SALVARSAN POISONING.

The well-recognized fact in therapeutics that any remedy which is potent for good will, if improperly used, be potent for harm is, perhaps, not as much appreciated as it should be. No drug has yet been discovered which is at once all-powerful along certain lines and innocuous along others, although, of course, some drugs, while capable of exercising many advantageous effects, seem to be incapable of doing much harm. It cannot be expected that remedies which depend fundamentally for their activity upon powerful mineral poisons can be used

with impunity, and this is particularly true of the arsenical compounds and notably of salvarsan. Originally thought to be almost harmless to certain tissues of the body, it has been found that if certain tissues are diseased, particularly those of the cardio-vascular renal apparatus, it is oftentimes a dangerous remedy. It is unfortunate that the reports which are given us concerning the action of drugs nearly always deal with their successes and not with their failures. Much of the literature for the last few years has teemed with the reports of cures effected by "606," and comparatively little literature has been produced recording serious effects which have followed its administration.

An instance of untoward effect produced by salvarsan has recently been reported in the *Journal of the American Medical Association* by Eberly. The patient was aged thirty-six, suffering from lightning pains in his legs, and gave a strongly positive Wassermann reaction. Through an error 0.6 gramme of salvarsan was mixed in 10 Cc. of freshly distilled water. Only a part of the drug was dissolved and none of the solution neutralized. It was injected in the cephalic vein of the right arm. Almost instantly the patient complained of a choking sensation, became extremely pale, with a weak pulse and labored respiration. It is estimated that about one-half of the fluid was injected. An hour later he was found to be markedly prostrated, vomiting, and complained of pain in the region of the left kidney. He remained in this condition for twenty-four hours, voiding no urine, but three ounces obtained by catheter showed a trace of albumin but no casts. On the second day the suppression of urine continued and the patient complained of weakness, chilliness, and general muscular aching. Phlebitis started in the vein which had been injected and extended to the shoulder, the arm being swollen, reddened, and painful. Subsequent to this the arm became more swollen and painful, and the temperature rose to 101° and afterwards to 102½°. Under active treatment urinary secretion was finally reëstablished, but not until after six weeks did the phlebitis subside and the urine become free from albumin.

This case is of interest not so much because it indicates that salvarsan is, under certain conditions of the patient, deleterious, but because it emphasizes the fact that the drug must be very carefully prepared before it is injected, and that any error in the technique of its preparation may result in grave illness or death.

LEAD ACETATE AS A DRUG AND POISON.

Lead acetate has largely fallen into disuse as an internal medicament for the treatment of various forms of diarrhea. During the Civil War a pill composed of a grain of acetate of lead, a grain of opium, and a grain of camphor was administered to sick soldiers indiscriminately for the purpose of controlling the acute, subacute, or chronic diarrheas which were, at that time, an inseparable result of camp life. The profession has gradually come to believe that the vegetable astringents, which depend almost entirely upon their content of tannic acid for their efficiency, have very properly supplanted acetate of lead, and thereby the danger of inducing subacute or chronic lead poisoning is avoided. Some practitioners, however, still employ this salt. A number of interesting points concerning it are brought forward by Charteris in the *Glasgow Medical Journal* for December, 1915.

Charteris points out that the various salts of lead have been not only used largely for the purpose we have described, but also in the treatment of such conditions as hemoptysis, hemorrhage complicating typhoid fever, and in chronic albuminuria and hematuria. It is hard to imagine how they can be expected to do any good in these conditions, since they must be changed by the hydrochloric acid in the gastric contents, or by the intestinal juices, long before they are absorbed, in such a way as to deprive them of any astringent effect. Charteris's paper is not intended to indorse

the use of lead acetate in these various conditions, but rather to point out its possibilities as a slow poison. Thus, in one instance, a man suffering from chronic nephritis with polyuria, albuminuria, and slight hematuria was given lead acetate with the thought that these complicating symptoms might be relieved. The dose was two grains of lead acetate three times a day, and this was continued for eighteen days, making in all 108 grains. Three days later the patient began to suffer from well-marked symptoms of lead poisoning, consisting in severe colicky pains in the abdomen, foul breath, and a blue line on the gums. There was no wrist-drop, no marked anemia, but the colic and constipation persisted for about eleven days.

It is interesting to note that in studying these cases Charteris found that by far the earliest symptom of lead action was the presence of stippling of the red cells—that is, basophilic staining. This stippling could not be differentiated from that which is met with in pernicious anemia and leukemia.

Other interesting observations were made as to the rapidity with which the blue line on the gum may develop. Thus, Charteris speaks of a case that showed the blue line after the patient had received only four lead and opium pills. Another one showed it after taking three grains of lead acetate for nine days. Two patients showed it in twelve days after taking thirty-six grains of lead acetate, but in other cases the blue line appeared much more slowly, even when doses of the same size were employed. Thus, in one instance, it appeared after forty-two grains had been taken, and in another after sixty grains, and in still another not until 128 grains had been ingested. He quotes Burton as speaking of a case that developed a blue line at the end of four days after receiving a total of fifteen grains. Another developed it in four days after using twenty-four grains, whereas still another took ninety-six grains in eleven days without showing the line. Other cases of a similar nature are also quoted.

So far as the effect of the acetate of lead upon albuminuria and hematuria are concerned they may be considered *nil,* as in some instances these symptoms actually increased or were not modified in the slightest degree.

Charteris further concludes that lead acetate is obviously not a drug which can be indiscriminately recommended in chronic hematuria and albuminuria, since even in medicinal doses there is a risk that plumbism may be produced, and, therefore, the drug ought not to be given for longer than two weeks in two-grain doses thrice daily.

TREATMENT OF ABDOMINAL WOUNDS IN WAR.

One of the burning questions of the day to the military surgeon is the one bearing upon the question of prompt operation in cases of abdominal bullet and shell injury.

Wallace (*Journal of the Royal Army Medical Corps,* December, 1915) notes that abdominal wounds form only a small proportion of the injuries met with in war. In nine field ambulances over a period of six months the percentage of abdominal wounds was a little under two. During the same period in seven casualty clearing stations it was 0.72. The mortality of the same field ambulances was 30.33, and in the same casualty stations 56.49. These figures apply to the period when abdominal cases were retained in dugouts, field ambulances, or casualty stations, and treated by starvation, morphia, rectal saline, and rest. Some attempt was made at the casualty stations to treat by operation those cases which arrived in sufficiently good condition, but the results were so bad that operations were for the most part given up. Bullet wounds of the small intestine seemed to produce their maximum destructiveness, but in the colon and stomach they at times produce complete or nearly complete division of the viscus. Shell fragments produce extensive injuries, but hardly worse, if at all worse, than bullets. The bomb fragments, though small, have an immense velocity and therefore great penetration. An insignificant wound of the skin may lead down to a series of intestinal perforations. Thus the whole

abdomen may be spluttered over with such wounds; the only way to make sure is to open the abdomen. As many as eighteen perforations in the small gut have been seen.

The least severe abdominal wound is an anteroposterior one in the epigastrium, and the most dangerous are side-to-side wounds below the umbilicus, anteroposterior wounds in the hypogastrium, and wounds in the pelvis inflicted by projectiles that enter the buttocks or thighs. On the whole, projectiles entering from the back are more fatal than those going in the opposite direction.

As to the determination of the peritoneal involvement the track of the bullet is significant, though not always determining. The rigidity of the belly wall and rise in the pulse are the principal guides. These signs are usually present within four to five hours. The main causes of death are shock, hemorrhage, peritonitis, and septic infection of the retroperitoneal tissue

It is hemorrhage which is so prejudicial to patients with wounded intestine, and which causes death after a mechanically perfect intestinal suture. Hemorrhage from the mesentery can be stopped, but the bleeding into the retroperitoneal tissue is often beyond help, as no bleeding point can be found. It is also especially prone to infection. There is usually but little escape of intestinal contents in the case of the small intestine; although the wounds be large the gut is apparently paralyzed. In large gut wounds there may be considerable fecal outpouring. The old belief in the spontaneous cure of gut wound is fallacious and dangerous. The stomach is the only hollow viscus in which spontaneous recovery may take place.

Wallace believes that all stomach wounds should be sutured; that wounds involving the small intestine should be closed by suture unless this involves too great a narrowing; in some cases resection and end-to-end suture are indicated. As much as 9 feet have been successfully resected. As far as the colon is concerned intraperitoneal wounds may be sutured, but if the rents are large a colostomy, especially in the vertical colons and flexures, is the safest course. Retroperitoneal wounds are best treated by the establishment of an artificial anus, a free opening being left at the sides to drain the infected areolar tissue.

The early operative treatment of abdominal cases has been practiced too short a time for the production of accurate figures, but it can be said that suture and a transverse colostomy is possibly the best course.

The mortality in six casualty clearing stations from July 1 to September 25 of 1915 was 48.77. This shows an improvement on the mortality of 56.49 quoted above.

THE OPERATIVE TREATMENT OF VARICOSE VEINS AND ULCERS.

Since the great abdominal veins to which the blood is delivered from below have no valves, there is a column of blood in these vessels unsupported save by the valves of the veins in the legs, a column drawn upward feebly by rhythmic alterations in intrathoracic pressure, but offering a considerable weight against which the blood from the extremities must rise, subject to the changes of abdominal tension, and often a menace to the integrity of the valves below it. To meet this strain, Homans (*Surgery, Gynecology and Obstetrics,* February, 1916) divides the veins of the legs into two systems: the deep, among the muscles and well supported by them, and the superficial, lying in the subcutaneous tissues, and supported only by skin, superficial fascia, and fat. Of these two systems the former is considerably the more capacious and obviously the less liable to disability, while the latter, though it probably carries much less blood, is more exposed to trauma and derives far less support from the tissues outside its own vein walls. The two communicate by what are called perforating or communicating vessels, in which the valves are so set that blood can normally flow only from the surface veins to the deep ones. These perforating vessels, which vary considerably in number and distribution, offer, therefore, a safety-valve for the superficial system.

The surface veins may again be divided into two subsystems, the great or internal saphenous, and the lesser or external saphenous. The great saphenous vein, after gathering radicals from the front and inner side of the foot and lower leg, passes upward, generally as a straight single trunk, inside the knee, along the inner anterior surface of the thigh, and into the femoral vein at the saphenous opening. The small or external saphenous vein drains the back and outside of the foot and leg, and empties in the popliteal space into the popliteal vein. It frequently communicates with its more important companion and, like it, is subject to considerable variation.

All the veins of the extremity are furnished with filmy, delicate, bicuspid valves. At infancy there are, between the foot and the groin, as many as fifteen to thirty sets in both great saphenous veins, but this number undoubtedly decreases even under normal conditions with advancing years. There is almost invariably a valve in the principal vessel just distal to each entering branch and one near the mouth of the entering vein as well. The valves of the deep and surface systems differ in no way from each other, and there is more often than not a valve in the femoral vein just above the point of entrance of the great saphenous. The arrangement of valves in the perforating veins, as has already been stated, allows of bloodflow toward the deep vessels only.

The principal physiologic features, then, of the venous circulation in the legs are the following: The veins pass the blood upward through a series of chambers separated by bicuspid valves set to permit only an upward flow; this flow is favored by movements of the leg muscles assisted by the forces in the thorax which tend to empty the vena cava, and by the push of the capillary circulation; the walls of the veins must support a column of blood whose height is measured by the distance to the heart above, and inasmuch as the abdominal veins are valveless, the pressure upon the upper valve, or upon the vessel walls below it if this valve becomes incompetent, may be enormously heightened by increase in intra-abdominal tension; the deep veins of the legs have a strong muscular support outside their own walls, while the surface veins derive an adventitious support only from the superficial fat and skin; a system of vessels perforating the deep fascia communicates between the two, and owing to the arrangement of its valves, lightens to some extent the work of the latter.

For all practical purposes a varicose vein in the lower extremities may be described as merely a valveless vein, or more properly a vein whose valves are incompetent. Having in mind this fact, one may obtain from a study of the circumstances under which varicosity becomes established and a knowledge of the pathologic changes which necessarily ensue, an explanation of the various forms which varix assumes and a rational basis for treatment.

The most obvious cause of the breaking down of the valves is hard work, by which the author means carrying or lifting heavy loads for long periods, as in the case of longshoremen, freight handlers, and laborers. The tension upon the abdominal muscles, the downward push of the diaphragm in violent breathing—in fact, the same strain which produces hernia—lays a heavy load upon the veins of the legs. Whether the valves become useless through stretching of the vein walls or are directly broken is immaterial. The occupations which involve standing for long periods without moving the legs are, in a less degree, a source of valvular incompetence, and this not from excessive back pressure but from stasis due to lack of muscular movement. Among women the venous engorgement of the legs so often seen even early in pregnancy may finally, after the birth of several children, result in varicosity. The author has also seen in young men, and in young women who have never borne children, instances of varix which date from childhood, apparently due to congenital abnormalities. All these etiologic factors tend to produce the well-known large, surface varicosities.

A second and smaller group of cases arises from phlebitis. The "milk-leg" after

labor, the phlebitis of typhoid and of post-operative convalescence, all give rise to varix which can generally be distinguished from that due primarily to engorgement.

Varix may assume one of two principal forms, depending in a general way upon whether it results from overstrain and stretching of the vein walls, or from phlebitis. In the first case the valves gradually become functionless, the vessel walls stretch until their nutrition is impaired, muscle-cells become replaced by inelastic scar-tissue, the vein becomes tortuous, local areas distend into pockets, calcification sets in, and, indeed, all the variations commonly observed in scar-tissue, ill-nourished and under tension, are likely to occur. As the onset of these changes is naturally gradual, effective collateral circulation corresponding to the degree of stasis in the main channels is frequently established, and true varicosity is often confined to the trunk and principal branches of the great saphenous vein.

The ulcers which occur under these circumstances are almost without exception in direct relation to the varicose vessel or vessels. They are said to "ride" upon veins, occurring almost exclusively in the lower and middle thirds of the lower leg. Fundamentally their occurrence seems to be due to a chronic irritation of the skin associated with stasis of impure blood in the vein beneath, as attested by the pigmentation which so commonly precedes them, but a frequent contributory cause is undoubtedly trauma, and the form which they ultimately assume must depend greatly upon the degree of infection which follows their establishment.

The perforating vessels do not usually share in the varicosity of the large tortuous veins. In many instances they continue for years to fill their rôle of safety-valves, carrying the stagnant blood from the surface veins into the deep system, which is well able to care for it. When, however, they in turn become dilated, the surface circulation becomes the more embarrassed in that blood may now pour out from the deep veins to the superficial. Under the circumstances ulcers are particularly prone to occur, and that over areas independent of the veins themselves.

The first and more common variety of varicose vein is, then, dilated, sclerotic, tortuous; often sacculated and calcified. It is not necessarily associated with very noticeable changes in the nutrition of the leg, owing to the effectiveness of collateral circulation and the preservation of the useful perforating veins. Ulcers when present usually "ride" upon the principal varicose trunk. In the more advanced cases, particularly when the perforating veins have become incompetent, the general nutrition of the leg may be poor, and ulcers may develop over wide areas.

The second and less common variety of varicose vein arises from phlebitis. In this case the valves are suddenly and universally crippled, possibly by the organization of the thrombus, the vein walls are thickened and the lumen narrowed. The circulation through such a vessel is just as ineffective as through a large dilated channel. Ulcers often appear within a few weeks or months of the phlebitis. The great saphenous vein is almost invariably small, hard, straight, and thick-walled, but there are occasionally seen groups of very thin-walled surface branches, as if a collateral circulation had been rapidly established and distended. The perforating veins are nearly always incompetent. The disturbance of the surface circulation is so profound that ulcers are often multiple and widely scattered over the lower leg. The skin and subcutaneous tissues over the whole calf and shin may become a mass of edematous scar-tissue. The foot, however, rarely shares this appearance. Apparently it is well cared for by the deep vessels, perhaps aided by the support of the shoe.

The methods by which the true nature of varicose veins was first effectively demonstrated were devised by Trendelenburg, who showed that in varix there is nothing to prevent a back flow of blood in the veins, and actually measured the pressure which the long column of blood exerted against the vessel walls in the leg. The tests devised by Trendelenburg are easily per-

formed. The leg is raised and held above the level of the heart until the veins are empty. It is then rapidly lowered, when the blood can be seen to flow back into the leg and suddenly distend the surface vessels. This test for varicosity may be positive even when the reflux cannot be seen to distend the vein walls, for if the veins are so sclerosed that no change in the tension of their walls can be noted by the eye, it can quite readily be felt by the fingers.

By such means valvular incompetence of the surface veins as opposed to hypertrophy or distention of normal vessels can be diagnosed, but still more information may be derived from a variation of the same simple procedure. Suppose it has already been determined that the surface veins allow a free back flow. The leg is now raised and the veins emptied of blood. If, before it is lowered, a constriction only firm enough to compress the surface vessels, as by a piece of bandage, is made about the upper thigh, blood cannot flow from above into the varicose superficial veins, and until they are filled by the natural circulation they remain empty.

This French writers have called the *contre-epreuve* of the Trendelenburg test, and it confirms the diagnosis, for on releasing the constriction the empty or partially filled veins become distended with a palpable shock. But this procedure tells even more. Suppose the perforating veins share the varicosity of the surface vessels. The blood in the deep veins will then be able, as normally it cannot do, to leak into the surface vessels, and in applying the constriction test it will be found that in spite of the prevention of back flow down the superficial veins, these fill rapidly below the constriction. That is to say, blood is finding its way out from the unobstructed deep veins through incompetent perforating vessels to the surface. In varicosity of the surface veins alone, filling below the constriction takes place in three-quarters of a minute or more, and even then these vessels may not be very tense, for the perforating veins are continually carrying off the excess of blood. If, on the other hand, the perforating veins are incompetent, the surface vessels will fill below the constriction, possibly in ten, twenty, or thirty seconds, according to the importance of the leak.

Relatively simple surgical measures may be employed to cure pure surface varices, and the least radical of these is the so-called Trendelenburg operation. The original operation was a simple ligation of the great saphenous vein in the thigh and was intended to relieve the veins below the ligature of back pressure due to the long column of stagnant blood. It has been modified into the excision of a short piece of vein between ligatures in order to prevent the reëstablishment of a channel, and this excision is performed as close as possible to the saphenous opening.

The operation should only be performed upon the aged or infirm, or perhaps to tide a young person over a difficult period, or, indeed, merely to heal an ulcer temporarily. An analysis of the results of this operation in the hands of various surgeons shows an anatomical recurrence after five years in 60 to 70 per cent of the cases, but with symptomatic recurrence in only 20 to 30 per cent (Miller).

The radical operation, and one to be advised for the cure of the common surface varix without the involvement of the perforating vessels, is Madelung's full excision of the great saphenous vein. The exact method of performing this operation is less to be considered than a general scheme which will satisfy the following requisites: first, that the great saphenous vein (and the lesser if involved) should be eradicated in such a way that there is no possibility of the reformation of its channel or the formation of a similar channel; second, that the ulcer or ulcers if present be permanently healed; third, that the wound or wounds should heal soundly and not interfere with the nutrition of the skin.

A transverse incision several inches long is made in the groin about an inch below Poupart's ligament. Through this incision the great saphenous vein is divided at the saphenous opening. At the same time any other veins which parallel it or enter from

above are found and divided in order to do away with any vessels capable of reëstablishing a large, single, collateral trunk. The long saphenous is then dissected out with the Mayo stripper or other appropriate means down to the region just below the knee. At this point open dissection should begin, for here the larger branches of the great vein begin to enter it, and though breaking the long column of blood by removal of the internal saphenous from groin to knee is likely in many instances to cure, it is always advisable carefully to dissect out the varicose vessels of the calf down to the point where they appear small and harmless.

The fulfilling of the second requisite, the cure of the ulcer, depends for its success principally on the accomplishment of the first—that is, the complete removal of the veins. It is often advisable, however, in removing the largest veins to take with them what may be called their tributary ulcers. Moreover, as was first pointed out in this country by the Mayos, if in association with the ulcers there has been found a very thick impenetrable base of scar-tissue, it is almost always necessary, in order to secure healing of the ulcers, to remove them down to, or better through, the deep fascia with the mass of scar-tissue beneath and about them; otherwise the poorly nourished tissue may harbor a leaking perforating vessel not disclosed by the tests and may never permanently heal. In consequence of laying bare this oftentimes enormous area, an immediate skin graft (Thiersch preferably) completely covering the denuded surface should be performed, and it is notable that such grafts "take" well upon fat, fascia, or even periosteum.

Finally, in securing the third requisite, the adequate nourishment of the skin and the proper healing of the wound after the dissection required by these procedures, perfect asepsis, perfect hemostasis, and delicate handling of tissues are of the first importance.

Straight, small, thick-walled veins of the post-phlebitic type are almost unnoticeable, yet the lesions which habitually mark their presence—ulcers, edema, atrophy of the skin—are obstinately resistant to treatment; the less noticeable the veins, the more malignant and resistant are the accompanying ulcers, and the more radical and thorough must be the curative operation.

In surface varix complicated by varicosity of the perforating veins, not only must the great saphenous be eradicated, but many of its branches in the calf must be followed and excised in the search for incompetent perforating channels. If these channels are not ligated they will continue to remain a source of venous stasis, and inasmuch as they are frequently found beneath ulcers in the center of great masses of scar-tissue, their removal is generally as difficult as it is imperative.

All such operations require the usual transverse incision below Poupart's ligament and resection of the great saphenous vein in the thigh. When the lower leg is not so densely indurated as to forbid free dissection of the calf, large, thick flaps should be turned back after the method of Madelung to expose the deep fascia of the front and inner side of the leg. The surface veins are dissected from the internal surface of the flaps, and in this dissection the varicose perforating vessels are likely to be found (the author has never recognized in the calf more than three, seldom more than two). They are tied beneath the deep fascia. When an area of scar-tissue is encountered, whether or not it is the seat of ulcer, the judgment of the operator must determine the thoroughness with which this tissue shall be dissected. If an ulcer is present, the whole mass of scar-tissue is best excised and its base skin-grafted. If ulcers have formerly existed and healed, a linear cut may be made through the indurated region and flaps turned back as usual. In this case the wound should be very loosely approximated.

In some instances, however, the whole leg below the knee is so edematous, indurated, and covered with ulcers that not only is the resection of the principal surface vessels a difficult matter, but the turning back of skin flaps for thorough dissection is impossible. It is under these conditions that the spiral cut of Rindfleisch is perhaps indicated.

After operation the ankle and knee should

be immobilized by a crinoline bandage with or without a ham splint. Immobilization need not be maintained longer than a week, but a firm bandage should be applied to the calf, especially when the patient is very obese, for two weeks in all. At the end of this time, if the incisions are well healed the leg should be exercised in bed and the patient may begin to get up. Upon beginning to walk a supporting bandage from toes to knee should be worn for several weeks. After this time all bandages should be discarded, for they may, if tightly applied, be actually harmful.

Skillern (*Annals of Surgery*, February, 1916) writes instructively upon the more conservative treatment of leg ulcers, basing his method upon the pathology and the application of the principles of protective drainage and support. Rubber tissue he regards as the best protective, cut in strips and applied over the ulcerating surface. Drainage is best secured by plain dry sterile gauze, while support is maintained by a roller bandage of muslin, this being applied to the leg in the form of a long figure-of-eight. Strapping is given high praise, although the author does not mention the particular form of straps he prefers. The routine treatment of the average varicose vein and leg ulcer by Unna's zinc oxide and gelatin paste enmeshed in a gauze bandage so as to form a stocking with the consistency of rubber is given first place. On the return visit the bandage is fenestrated at the seat of ulcer. To prevent peripheral pressure radiating incisions may be made through the bandage. Unless it becomes loose or very much soiled the Unna stocking need not be changed for two or three weeks. After varicose leg ulcers have been cured, it is important immediately to institute prophylactic methods against recurrence; and for this purpose a well-fitting silk-elastic stocking or a Randolph bandage should be advised.

Obvious leg varicosities are exceedingly common; it is exceptional that they become crippling factors. When they do they and their complications are usually amenable to conservative treatment, which is best accomplished by support, an Unna stocking being an easy and efficient way of accomplishing this. A patient who is not benefited by skilfully supplied support is not likely to be helped by operation.

REPORTS ON THERAPEUTIC PROGRESS.

PITUITARY EXTRACT: A NOTE OF WARNING REGARDING ITS USE.

In the *New York Medical Journal* of October 30, 1915, BANDLER says it is timely that a warning should be issued concerning the misuse of pituitary extract. Several cases of rupture of the uterus have been reported at medical society meetings; reports of others have come to the writer's ears, although none directly under his notice. Hence he believes it is wise to give a word of advice concerning this valuable drug.

Nothing has been introduced into obstetrics in his time to approach the value of pituitary extract, if used in the proper manner and in proper doses. Pituitary extract increases the contractile power of the uterus. It is evanescent in its effect, the influence lasting, in proper doses, about half an hour.

The writer never uses more than a third of an ampoule at the first hypodermic injection, occasionally, when necessity demands, going as high as one-half an ampoule. This is one of the important factors to be borne in mind; otherwise, we get an extremely powerful contraction of the uterus which may do no harm, provided that all conditions are normal, but which may be productive of harm, and which certainly is bound to be dangerous if conditions are abnormal.

Inasmuch as we have in pituitary extract a drug which increases the contractile force of the uterus, it is clearly apparent that, if the uterus contracts upon a body within it which will not advance and cannot advance because of malposition, or a malproportion

between it and the pelvic bones, if it contracts powerfully enough, it is bound to be injured, and a rupture may take place.

In some instances it has been reported that rupture was so complete that the cervix was almost completely amputated from the fundus. Now, some men may make the error of attempting to put on forceps when the head is above the pelvic brim, not engaged, not molded, etc. A skilful man may do this, a very skilful man, to test the possibility of molding, but in general this is a most unwise procedure. If attempted by men who do not realize the indication for forceps, the worst that may happen is that no progress is made and the fetus is destroyed. Then a specialist or consultant is called in to extract the fetus by version, craniotomy, or otherwise.

With pituitrin it is different. A man may not recognize that the presentation is abnormal; that the head is not firmly engaged, fixed, and molded in the pelvic brim; he may make no examination, and thinking that pituitary extract is a cure-all, a drug that brings the fetus out within a relatively short time, without knowledge of the position and the presentation, he uses pituitary extract. Some men are so deficient in tactile sense that they do not recognize even gross malproportions or transverse presentations.

Needless to say, if pituitrin is used even in small doses, harm may result, but if used in what is considered the average dose by many practitioners, serious injury is bound to result, and it is no wonder that we hear at the present time of rupture of the uterus.

The logical view is as follows, and the writer's experience has shown him that these are essential preliminaries. First, we may deal with a primigravida, where the head is firmly fixed, molded, and engaged in and through the pelvic brim. This assures us of a proper proportion and relationship between the vertex and the pelvic bones, and we know that with or without forceps, with or without pituitrin, this baby can be born through the normal channel, and ought to be born, barring unusual accident, alive.

In a case of this sort, if the progress of labor is slow, whether in the first stage, or particularly in the second stage, it is the duty of the physician in charge to decide what to do. He may give the patient a hypodermic injection of morphine and atropine, and allow her to rest a while, expecting the uterus then to make more powerful contractions and deliver the fetus; or after trying this method, or without it, he may apply forceps; or he may do what the writer has done for the past three and a half years —*i.e.*, in cases in which, in spite of normal conditions, the uterus is not propelling the fetus rapidly enough, use pituitary extract in one-third of an ampoule doses.

The writer can say that since he adopted this method in this class of cases, he has not been compelled in a single one of his private patients to use the forceps. The effect of the extract is very transitory, lasting only half an hour. In some few cases it seems to start the pains so that they go on rhythmically from that time on, and only an occasional additional hypodermic injection is necessary.

In other instances the effect wears off, and the dose must be repeated every half-hour. The writer has given eight, ten, and even twenty such injections, and often more in a large number of cases (and thus have avoided the use of forceps), without injury to mother or fetus.

In fact, he fails to see how this method, if adopted and carefully followed, can result in harm, because—and this he wishes to repeat with emphasis—the drug used in this manner, and with the indications properly understood, only develops a more progressive labor of the same type as is found in the average normal case, *i.e.*, one which runs along to delivery within seven, eight, or ten hours without any delay in the first, second, or third stage.

PITUITRIN IN THE TROPICS.

The *New York Medical Journal* of October 30, 1915, recalls to our attention the fact that Johnson, in an original communication to the *Dublin Journal of Medical Science* for October, 1915, discusses pituitrin and its action on women in the tropics. He

summarizes his conclusions somewhat as follows:

(1) The child must lie in the long axis of the uterus and present preferably by the head. (2) There must be no pelvic contraction beyond a very slight amount, and no obstruction of any kind to labor. Rectum and bladder must be empty. (3) The os must be soft and easily dilatable. (4) The dose should be 1 Cc., not more, except in cases of inertia of multiparæ. It should not be given more frequently than once an hour, and never more than 5 Cc. in any one case. (5) Injection into the buttocks is the best way of introducing the drug. (6) The best time to get the full effect is at the end of the first stage and with the membranes ruptured. (7) The drug has no more effect at full term than at any other period of pregnancy. (8) It is well to give a routine dose of 1 Cc. in every case that fulfils the conditions necessary for the use of the drug because of the great help it affords in causing detachment of the placenta. (9) The perineum must be especially guarded, as the pains caused by the pituitrin are of great expulsive force. Chloroform diminishes the intensity of the pains, and if pushed causes their disappearance. (10) The milk-increasing power of pituitrin and its use as a peristaltic and diuretic, alleged by some authorities, do not seem to apply to Europeans in the tropics. (11) Large doses frequently repeated seem to have a slight toxic effect on mother and child.

Where it was possible Dr. Johnson always instructed his patients to have a hot sitz bath every evening for about a quarter of an hour for the last three months of pregnancy, then to use pure olive oil as an inunction for the perineum and surroundings. He removed all meat from the diet for the last four months. These details, with the usual care for general hygiene, seemed to aid pituitrin in its effect.

Dr. Johnson urges care in the selection of a preparation of pituitary gland. He had what he calls "startling" results from one well-known proprietary preparation, while another—American—gave him uniformly good results in 100 cases.

THE PATHOLOGICAL ACTION OF ARSENICALS ON THE ADRENALS.

In the *Journal of Experimental Medicine* of November 1, 1915, BROWN and PEARCE reach these results:

1. Toxic doses of all arsenicals of which we have any knowledge produce definite pathological changes in the adrenals of guinea-pigs. These changes include congestion, hemorrhage, disturbances in the lipoid content, cellular degenerations and necroses, and reduction in the chromaffin content.

2. The character and severity of the injury produced by different arsenicals vary with the chemical constitution of the compounds.

3. From these facts, Brown and Pearce believe that adrenal injury is an important factor in arsenical intoxication and suggest that therapeutic doses of some arsenicals may produce adrenal stimulation.

THE EARLY RECOGNITION AND TREATMENT OF THE COMMON AFFECTIONS OF THE EYE.

The *Philadelphia Medical Weekly Roster* of December 4, 1915, contains the views of S. D. RISLEY. He says that one of the most common, serious, and fateful pitfalls for the feet of the inexperienced is the group of ocular affections which culminate in increased tension of the eyeball. Fateful, because if neglected or improperly treated they lead to the hopeless destruction of function. Glaucoma is not an entity but a symptom, or the culmination of a symptom-complex. It occurs during or after middle life in patients with impaired health of the nutritional and toxic or infection types. The uveal tract of the eye is very prone to participate in these general maladies in the form of choroiditis, inflammation of the ciliary body and the iris. The excretion of the intraocular fluids is retarded or prevented, the contents of the globe increase, and the eye becomes hard, red from injection, the cornea hazy or steamy and insensitive, the pupils dilated. There is pain, often extremely violent, in the eye and head, one or both; the vision is impaired; the field of

vision contracted. The attack may be transient, but is sure to recur. The danger is that this striking symptom-complex may be mistaken, because of the redness, increased flow of tears, dread of light, and the apparently sudden onset, for infectious disease of the conjunctiva and treated accordingly; or, because of the pain, redness, and impaired vision, for iritis and treated vigorously with atropia, which always does harm in increased tension, or may precipitate an attack of acute inflammatory glaucoma when such a culmination is imminent; or in relatively mild cases, that is to say in subacute or in non-inflammatory glaucoma, the pain produced by the increased tension may be referred to the temples, brow, or occipital region and the case diagnosed as a neuralgia, the eye conditions being overlooked or regarded as secondary. In case of doubt as to the correctness of diagnosis, Risley knows of no other form of eye disease in which the interest of both physician and patient suggests more strenuously the wisdom of consultation with some trusted and experienced colleague than in glaucoma imminens.

ADMINISTRATION OF EMETINE DURING PREGNANCY AND MENSTRUATION.

The *New York Journal* of December 4, 1915, quotes A. J. Chalmers and D. Papatheodorou, in the *Journal of Tropical Medicine and Hygiene,* as reporting their clinical experience in relation to the possibility of treating amebic dysentery in pregnant and menstruating women with emetine hydrochloride, in view of its known utero-tonic effect. The conclusion reached was that a half-grain (0.03 gramme) daily dose of emetine is the maximum which can be given safely in pregnancy. Even the effect of these doses should be carefully watched and no more of the drug injected than is required to kill amebas in the stools, all question of a complete cure being set aside until after delivery. It appears advisable to the authors, likewise, not to administer emetine during the menstrual period, though if it is urgently required, it can be given without causing serious harm, and continued in the intermenstrual period. In one of the authors' cases menstruation appeared during daily administration of half-grain doses of emetine, but suddenly ceased on the second day, and did not reappear, though the injections were stopped. Subsequent periods, in the absence of the drug, proving quite normal, the previous menstrual arrest is ascribed to the simultaneous use of the remedy.

TREATMENT OF OPIUM OR MORPHINE ADDICTION.

RUCKER in the *Medical Record* of October 30, 1915, gives the following statement as to his treatment of the opium habit:

When a patient presents himself for treatment a conference is had with him to ascertain something of his character, motives, and the amount of drug used. He is examined physically, and a laboratory examination of the blood and urine is made. If he is using 2 grains or less of morphine per day, and his condition is good, he is given purgatives for two or three successive nights and an electric light bath every day, and is put to sleep the third or fourth day after he enters for treatment. If a large amount of morphine has been taken for years the preliminary treatment is extended to one or two weeks, according to the condition and needs of the patient. He is given a purgative of 5 to 10 grains calomel and soda and two or three pills containing aloin, strychnine, and belladonna, at about 8 P.M. every other night, the electric light bath being given every other day. The drug is also reduced every other day. If the daily dose has been 10 or 15 grains of morphine, he is reduced to 6 or 7 grains in the first cut; then, say, 1-grain reduction until about 2 grains are reached.

Then the special treatment may be given, which is carefully carried out as follows: On the afternoon preceding the special treatment, 10 grains calomel and soda, 10 grains compound jalap powder, and two or three pills containing aloin, strychnine, and belladonna are given at 5 P.M. The last dose of morphine is given not later than 6 P.M. the same day. No supper is given. At

8 P.M. Rucker gives 15 grains calomel and soda, 10 grains compound jalap powder, and three of the aloin, strychnine, and belladonna pills. The patient is left alone until 6 A.M. the next day (first day of special treatment), when Epsom salt or some active effervescing saline is given in a tumbler of water. The patient is given a warm tub bath about 6.30 A.M., and put to bed in a different room from the one previously occupied. The room vacated and all the clothes of the patient are carefully searched some time during the day for any drug he may have secreted. At 7 A.M. a dose of 30 to 35 grains of trional is given, followed by a glass of hot sweet milk. At 10 A.M. to 2 P.M. the same size dose of trional is given, if the patient is awake, followed by the hot sweet milk. If the patient is asleep when the times come for the second and third doses of trional, we should wait until he awakens, then repeat the trional powder.

The patient is kept in bed, shades down and room darkened, and a special nurse assigned to care for him and give treatment for two or three days, or longer if necessary. The nurse is instructed to keep things quiet in the room, to give the patient water or milk when he is wide-awake, and to feel his pulse occasionally. No one is allowed to see him during the special treatment except the doctor and nurse.

At 6 A.M. the second day a 90-grain dose of sodium bromide is given in a tumbler of water. At 10 A.M. and 2 P.M. another dose of 60 to 90 grains of sodium bromide is given in a tumbler of water if the patient is awake. The patient is kept in bed the second day, and the room is kept darkened and quiet. The physician should go in to see how patient is doing at least twice a day.

At 8 P.M. the second night 5 grains of calomel and soda and two or three aloin, strychnine, and belladonna pills are given, with 7 or 8 grains of veronal.

At 6 A.M. the third day of treatment is begun with a saline in a tumbler of water. A tonic prescription of fluid extract cimicifuga 6 drachms, avena sativa 9 drachms, and aromatic elixir enough to make 3 ounces, one teaspoonful in water at 7 and 10 A.M., and 2 and 5 P.M. Rucker also gives hypodermically strychnine nitrate 1/30 grain, and atropine sulphate 1/100 grain, at 8, 12, and 4 o'clock. These drugs are given in reduced dosage for two or three weeks. The patient is allowed to get up on the third day, if he feels like it. Baths are continued every other day. Light, regular meals are allowed on the third day and increased as the patient's appetite gets better. As a rule, the patient improves rapidly and soon feels better than when taking opiates.

Drug users can stand large doses of purgative medicines. Calomel will not salivate when combined with other purgatives and followed by a saline to properly work it out of the intestines. The gums may become a little tender, but this will pass away in a few days. Drug patients will also tolerate large doses of hypnotics and will take 90 to 100 grains of trional (in three doses) during the first day of the special treatment, without bad effects. Anuria occurred in one patient, but Rucker believes this was due to the patient's condition rather than to trional. The electric light bath is extremely useful; it is a powerful stimulus to the general circulation of the blood and increases the action of the skin and kidneys. It is also calmative to the nervous system and induces sleep. Rucker has taken patients off of morphine without giving the electric light bath, but they do so much better with it that it has become part of his routine treatment.

ACIDOSIS: ITS CAUSATION AND TREATMENT.

COOPER in the *Clinical Journal* of November 24, 1915, reminds us that acidosis occurs typically in diabetes, where it is the invariable forerunner of coma. It occurs in a large number of other conditions apart from any glycosuria—*e.g.*, in starvation, cancer, anemia, gastric ulcer and other disturbances of the gastrointestinal tract, exhausting fevers, and other conditions of impaired nutrition or deficient assimilation. It also occurs in uremia, the toxemia of pregnancy, many cachectic states, and after operations and general anesthetics, especially chloro-

form. There can be no doubt that the presence of acetone and its associated fatty acids in the blood is not only a grave condition in itself—the acids themselves being highly toxic to the blood and tissues, and interfering with "internal respiration," as shown by the great collapse, anemia and air-hunger, the emesis, the practical suppression of urine, the albuminuria, etc.—but it also denotes a profound disturbance of metabolism in general. Nitrogenous equilibrium is no longer being maintained, and the output of nitrogen greatly exceeds the intake, which may be *nil*. The reserve of carbohydrate (glycogen) in the body is used up, and the nitrogenous tissues have themselves to supply the place of the protein element of the food—the individual is literally living on his own tissues. The disintegration of the tissue proteins results in their separation into a nitrogenous and a non-nitrogenous moiety, and from the latter by a further decomposition are probably formed fatty acids (aceto-acetic and B-oxybutyric, etc.), which are found in the blood in the condition of acidosis. But whatever be their mode of origin in the blood the presence of these acids can be readily demonstrated. The seriousness of the acidosis is quickly appreciated when we remember that one of the essential respiratory functions of the blood is the removal of CO_2 from the tissues. This is ordinarly accomplished by fixing it with the normal alkali of the blood. In acidosis the normal alkali of the blood is neutralized by the abnormal acids present, hence the great dyspnea or air-hunger, which, however, results not so much from a deficiency of oxygen as from a poisoning with carbon dioxide. For the same reason the relief which promptly follows the intravenous infusion of alkali far exceeds any derived from the inhalation of pure oxygen.

Without going further into the pathogenesis and organic chemistry of the condition, it is sufficient for the present to lay stress upon the importance of the early detection of acidosis in all grave cases of illness, especially where there is impaired nutrition of any kind. In diabetes it is a state always to be kept in view and prevented as far as possible. In non-diabetic conditions, however, its results may be hardly less serious. Patients with well-marked acetonemia who are unable to take food are undoubtedly in jeopardy; they need constant watching and attention. They should be placed in the charge of a day nurse and a night nurse, and should be under frequent medical supervision. At the least sign of collapse strychnine, digitalin, caffeine, and even ether may be required hypodermically. Oxygen, if available, may be of slight service, but the most urgent indication is to neutralize the acid in the blood by means of an alkali. In extreme cases the alkali may be given intravenously. We cannot, however, introduce an unlimited amount of alkali into the blood without causing serious cardiac depression. As a rule not more than 2 or 3 pints of a 6-per-cent solution of sodium bicarbonate, suitably filtered and sterilized, should be given, under strict aseptic conditions, at the temperature of the body, and very slowly admitted—say, taking half to three-quarters of an hour for the injection.

Neutralizing the acid in the blood does not prevent its formation, however, and to secure this we must endeavor as quickly as possible to reëstablish normal metabolism. This can be done only by supplying food, which, again, can be achieved only by rendering the alimentary canal fit to take in and assimilate food, for it is found that as soon as carbohydrate food can be absorbed and utilized the nitrogenous excretion greatly diminishes and the acidosis lessens. The indications are to clear the alimentary tract of its impurities and to try to reëstablish its secretions. If incessant vomiting is present the stomach-tube should be promptly used, and the stomach washed out with sodium bicarbonate solution (one or two drachms to the pint), a few ounces of pure solution being left behind in the stomach.

If the patient is not sick a good purgative should be immediately given—*e.g.*, 5 grains of calomel followed by saline, or 1 ounce ol. ricini, etc. Failing this the bowel should be emptied by enemata; rectal salines combined with sodium bicarbonate can then be given at four-hourly intervals. As soon as

the stomach will retain it an alkaline mixture is given by mouth. Carbohydrate food in an assimilable form is commenced at the earliest moment, and for this purpose Benger's food answers extremely well. As soon as possible the patient should be got into the open air. Great care in regard to diet, regulation of the bowels, mental and physical effort, etc., must be exercised for a considerable period afterwards to avoid a serious relapse.

ACTION OF LETHAL DOSE OF STROPHANTHIN IN ANIMALS.

The *Journal of Experimental Medicine* of November 1, 1915, contains an article by JAMIESON on this subject. He believes that when a like amount of strophanthin is injected intravenously, the mortality is the same in both normal cats and in cats suffering from experimental pneumonia.

The minimum lethal dose of strophanthin is the same in normal dogs and in dogs suffering from experimental pneumonia.

The presence of an acute infection in these animals does not interfere with the action of strophanthin on the heart.

Electrocardiographically the changes occurring in the heart's action when strophanthin is injected are found to be similar in normal and in infected animals.

The identity of strophanthin action in infected and normal animals renders it probable that a like similarity may be anticipated in man, under normal conditions and in pneumonia.

RESEARCHES ON THE PERFUSED HEART.

In the *Quarterly Journal of Medicine* for October, 1915, BURRIDGE reaches these conclusions from a research:

1. The two muscular functions of contractile capacity and ability to contract with respect to excitation by induced shocks are entirely distinct. A muscle may have an intact store of contractile material able to contract, and yet, owing to the loss of excitability, give no evidence of this on attempted excitation by induced shocks.

2. In every heart so far examined it has been found possible by appropriately employing potassium salts to demonstrate the presence of a certain stock of contractile material. For brevity this capital stock is designated C. C is a quantity varying from heart to heart, but constant in value under ordinary conditions in any particular heart.

3. The variations in amplitude of the spontaneous contractions correspond to variations in the proportion of the total contractile material evoked by the normal stimulating agency of the blood. They lie apparently indefinitely between the limits zero and C. But at any point of these variations, unless some rigor-inducing agency has been employed, it is possible to show, by using the appropriate salt of potassium, that the heart maintains an unaltered capital stock of contractile material.

4. The majority of drugs, though they may cause very great variations in spontaneous activity, do not alter the value of C. Its value seems only altered by coagulation or rigor.

5. Two groups of phenomena are described in the frog's heart, to each of which the term cardiac failure is applied. They are: (*a*) cases in which the amplitude of these spontaneous contractions has increased, but in which by using potassium it can be shown that the capital stock of contractile materials is undiminished—C unchanged; (*b*) cases in which the amplitude of the spontaneous contractions has diminished, accompanied by a corresponding diminution in the amplitude of the contraction then evoked by potassium—C diminished. The two types may be combined in any one heart.

6. Digitalis can restore the amplitude of the spontaneous contractions toward their original value in cases of the first type only. Accordingly it is concluded that the condition of the heart in clinical cardiac failure is of that type also.

7. An examination of cases of the first type shows that the failure in them results from alteration in the relation of the heart to the calcium in the solution perfusing it. Two subdivisions are found. There are

(*a*) cases in which the heart-beats are diminished in amplitude consequent on a decreased tension calcium in the perfusing solution, the heart itself remaining 'normal;' (*b*) cases in which the composition of the perfusing fluid remains constant, but in which the heart itself reacts less vigorously to calcium than it did originally.

8. The mechanism for maintaining and utilizing the cardiac reserve is suggested to be as follows. The heart has a certain capital stock of contractile material, the activity of which is evoked by the calcium of the blood. Under ordinary circumstances the relations between the heart and the blood calcium are such that the calcium evokes the activity of a certain proportion of the whole. By altering the magnitude of response of the heart to calcium a greater or less proportion of that whole is rendered active. During sympathetic stimulation a given tension of calcium can evoke the activity of a greater proportion of the whole cardiac contractile material than was the case before such stimulation.

9. In clinical cardiac failure the response of the heart to such amounts of calcium as are present in the blood is sufficient to maintain an adequate circulation. Digitalis is a drug which enables a given tension of calcium to evoke the activity of a greater proportion of the whole contractile material than is the case in its absence.

THE PUERPERIUM.

ARNOLD in the *New York Medical Journal* of December 4, 1915, in a paper on this topic condemns a number of common practices in obstetrics. He begins with one of the first routine acts in the puerperium—the application of the abdominal binder. It may be obstetrically sacrilegious to say it, but he certainly believes it is a mistake to suppose that a "high stomach" may be avoided, postpartum hemorrhage prevented, or the process of involution favored by boxing up the uterus in abdominal pads placed "exactly so" and held there by a tightly fitting abdominal binder, which pads and binder, fortunately for the patient, remain "exactly so" for only a very brief length of time. The latter fact in itself is sufficient proof of the uselessness of the practice. If the binder is used at all, let it be a simple one, that for a few hours may conduce to the mental and perhaps physical comfort of the patient, and at the same time not prevent the physician or nurse from easily observing the condition of the uterus. There have been a number of harmful effects charged to this indefensible pad and binder tradition, but there is enough to condemn it without admitting these. The false feeling of security that the practice engenders, the prevention of that very desirable oversight of the uterus in the first few hours of the puerperium, and the entire uselessness of the procedure are sufficient reasons for its discontinuance.

Second, it is a mistake to attempt to keep every puerperal woman flat on her back for a great length of time. Of course there are exceptional cases in which such treatment may be advisable to have the woman remain quietly on her back for a few hours postpartum, but in the great majority of cases routine orders to keep the patient on her back have no other justification than the physician's fear to depart from common practice.

In the first place, such orders are seldom obeyed, and in all but the exceptional cases it would be imposing an unnecessary hardship, or doing the patient a positive injury, if they were obeyed. To permit a woman to move from side to side, to be raised up in bed when necessary, and to have the greatest freedom consistent with her strength, will not only add greatly to her comfort, but will facilitate drainage, aid the pelvic circulation, and favor involution.

Third, another rather prevalent custom that seldom has any reasonable argument in its favor, is that of starving the puerperal woman for the first three or four days. Arnold has often asked those who still adhere to this tradition to give him their reasons. Thus far he has not yet received a reply that he would consider worthy of discussion. For years it has been his practice to feed his puerperal patients in

accordance with their needs and desires, even to the extent of a full meal within twenty-four hours, or as soon as the appetite demands it; and he has never seen any ill effects or any reason to revert to the old starvation diet. On the contrary, he is satisfied that this judicious liberality in food, and in the postpartum activity, has given better lactation and an earlier and more satisfactory convalescence.

Fourth, it is usually if not always a mistake to suppose that an elevation of one or more degrees of temperature without any apparent cause is gastrointestinal in origin. What a host of little sins of omission and commission are covered by this much-used gastrointestinal cloak! As an excuse it is almost as much overworked as the old "catching cold" explanation used to be. Nor do those who still hold to this self-excusing view prove their contention by citing many cases of moderately elevated temperature that clear up under active catharsis. A mild degree of infection or of sapremia, as such a temperature practically always indicates, may often be favorably influenced by the increased elimination, the stimulated pelvic circulation, and the facilitated drainage produced directly or indirectly by a purgative. The treatment may be very good, but this does not explain the cause and should not console the obstetrician into the belief that he is not to blame, and thus prevent his making a closer and more critical study of his technique and of the conditions of the birth canal, with a view to preventing such infection in the future.

Arnold can see no reasonable ground for believing that such temperatures are due to a day's constipation. Just why the failure to have a bowel action for a day or two should suddenly begin to produce elevation of temperature in a woman whose normal habit all her life, perhaps, has been one of constipation, is something he has not yet seen explained by those who profess to believe in it. His own treatment in such cases (and we all have them now and then) is to give whatever attention is necessary to the bowels—that, of course, is important; but more important is to increase the patient's resistance with the stimulation of good food, to quicken her pelvic circulation by allowing her a reasonable amount of activity, and to favor better uterine drainage by elevating the head of the bed (or having the patient sit up), and to stimulate uterine contractions both manually and with drugs. And this leads him to note that the fifth rather frequent mistake he has seen is that of thinking that a postpartum high temperature such as this, which does not readily clear up with a purgative, or that is accompanied by a foul discharge and some tenderness and subinvolution of the uterus, is an indication for intrauterine douches, curettage, or other such questionable interference. More than once has he seen this mistake lead to prolonged and serious illness, and even to the death of the patient. A safe rule in such cases is to keep out of the uterus absolutely, even though one may suspect or believe that there are retained secundines. Facilitate drainage, as Arnold has just indicated, by elevating the head of the bed, and give one or more doses of pituitary extract or of ergot, or both. These drugs, with a little massage, will often contract down a boggy, subinvoluted uterus, force out old clots and sapremia-producing débris, and thus readily and safely lower a bothersome temperature.

Sixth, another traditional custom still widely prevalent in general practice, and, strange as it may seem, still taught in some text-books and medical schools, is that of attempting to dry up the lactating breasts by various internal medicines and applications. When for any reason, such as the death of the child, there is no demand for lactation in the puerperium, or when at a later period, as at weaning time, it becomes necessary to take the child from breasts that are in full function, the question of what to do to dry up the milk is often an urgent and important one. It seems to be very difficult, both for the profession and the laity, to get away from the old idea that some more or less complicated or specific treatment must be employed for this purpose.

Generation after generation of text-books and obstetric teachers have so instilled this

ancient delusion into the minds of the profession at large, that we cannot wonder that many physicians still cling to it. Some years ago Arnold had occasion to make a little study of this question. He found at that time that nine out of twelve modern works on obstetrics recommended for drying up the milk a varied and extensive line of treatment, including potassium iodide, potassium acetate, camphor, chloral, ergot, atropine or belladonna in some form, either internally or externally or both, electricity, lead-water and laudanum, all kinds of salves and poultices, with saline purges, restriction of diet, massage, breast pumps, and tight binders—any and all of which have long since been repeatedly proved not only to be unnecessary but absolutely useless.

With so many of the leaders in the profession still giving out these antiquated ideas on the subject, it is little wonder that each family doctor has his own pet method, or is obliged to vie with the laity in the number if not the absurdity of the remedies recommended. The one simple and invariably successful method, of course, is to let the breasts absolutely and severely alone. This has been demonstrated so often and so conclusively now that it seems superfluous to speak of it again. Yet it may be worth while very briefly to refer to a few practical points that may make or mar the success of the treatment.

Letting the breasts alone means, of course, the prevention of all local stimulation, and this usually means that all arm movements that disturb the mammary glands must be for a time prohibited: for instance, the attempts of the patient to comb her hair. Arnold used to make the mistake of torturing these women with a tight breast binder, but this also is wholly unnecessary, and gives no better results than a simple supporting sling. The breasts, when thus let alone, will of course overfill and often become quite painful for a day or two, but they will do this under any treatment unless the milk is drawn, and it is better to relieve the pain with a narcotic than to use the breast pump. Mammary abscess need not be feared unless surgical cleanliness is grossly neglected. Arnold has used nothing but this let-alone treatment for the past ten years, and has never had an abscess and never a failure to get prompt and satisfactory results, except where the patient or nurse was too skeptical to obey orders. It seems reasonable to suppose that the restriction of liquid foods would have a good effect, but Arnold has not found it so. Nor, let him say in passing, has he found that the quantity and quality of foods, liquids, and stimulants ordinarily used to increase the flow of milk have half as much effect for this purpose as local stimulation by massage, heat, and systematic nursing.

Seventh and finally, there is the mistake so commonly made of having a routine time for getting the patient up after confinement. The question as to when a woman shall leave the lying-in bed is often determined more by the age of the baby than by the condition of the mother; by the number of the day rather than by the degree of involution. There is a wide range of practice in this respect, from those who regularly get their women up on the third or fourth day, to the more conservative men who seldom allow a patient out of bed under two weeks. The point Arnold makes is, that it is a mistake to fix upon any day, early or late, as a routine time for getting puerperal patients up. They are certainly not all alike; why should they be made to conform to a common rule? Careful examination will show that one woman is as far advanced in the process of restoration on the sixth day as another equally well appearing woman is on the twelfth day. It would be injustice to both women to make them conform, for instance, to a "ninth day" rule. Lack of space forbids discussion of the several factors that determine whether the puerperium shall be long or short. It has been proved beyond any question that the mental and physical energies, in many cases, can be so conserved, by a more liberal use of anesthesia in labor, that the convalescence and time of getting up will be greatly favored. He knows that in his experience, which is not different from that of many others, the judicious use in the first stage of labor

of the morphine-scopolamine combination, for instance, and of chloroform properly administered in the second stage, has so frequently shown a favorable influence in the puerperium that for this reason alone he would feel amply justified in the use of these drugs.

RADIUM IN THE TREATMENT OF CARCINOMAS OF THE CERVIX UTERI AND VAGINA.

In the *Journal of the American Medical Association* of November 27, 1915, KELLY and BURNAM state that they are convinced that radium is of exceedingly great value in the treatment of cancers of the cervix uteri and vagina.

They expect with all confidence that the results in the next 200 cases will far surpass those reported now.

They again emphasize that the betterment in the improved but not cured cases is so marked that it alone makes radium a great addition to existing methods and would justify its use.

They believe that every inoperable cancer of the cervix uteri or vagina, provided general metastasis is not evident, stands a chance of at least 1 in 4 of cure by radium treatment.

There is marked reason to believe not only that a large number of inoperable cases are curable, but that by the joint use of radium and operation the 1-in-4 cure rate of operation in operable cases may be raised to 3 in 4 or better.

The authors have seen that some cervical cancers do not respond to radium treatment. This same variation in reaction occurs in many other types of neoplasm. It is apparently due to a lack in the patient of resistance to the specific growth. Work should be directed toward determining where the body products which attack a radiated cancer arise and what they are. On account of the certainty that some of the operable cancers of the cervix would not be cured by radium, and also on account of the necessity of having many patients over five years cured in order to be sure of the permanency of the results, they advise, in operable cases, hysterectomy and radiation. This is the rule in clearly operable conditions. In border-line cases, they advise the use of radium, as the permanent cures from operation are not numerous in this group. If the growth does disappear, it can only be determined whether or not hysterectomy is advisable by trying out both methods; this as yet has not been done in a sufficient number of cases to arrive at any definite conclusions. They do feel, however, that when clinical cures have occurred in inoperable cases, operations are probably best not carried out. Manifestly an inoperable case which becomes operable but does not entirely heal should be treated by operation.

Finally, they desire to restate most emphatically that radium can and should be used in these cases without any local or general injury to the patient treated.

DUODENAL ULCER.

MULLINS in the *New York Medical Journal* of December 4, 1915, says that in considering the treatment of duodenal ulcer, it must be admitted that in the acute and early stages of its development medical and hygienic methods are beneficial and often curative, but when the condition has repeatedly recurred or does not respond after a reasonable trial of palliative means, it must then be designated a chronic ulcer, the treatment of which resolves itself into surgical procedure. Several operations have been devised, the details of which he will dwell upon only to call attention to their comparative value. They are: Excision; one or other form of pyloroplasty; gastroduodenostomy after Kocher; gastrojejunostomy, either anterior or posterior, with or without plication at the pylorus.

Excision can be practiced only when the ulcer is small, lest too great a narrowing of the duodenum result, unless by resection of the first part of the duodenum and the pylorus with the subsequent gastroduodenostomy.

Pyloroplasty after the Heineke-Mikulicz method—incision in the long axis of the gut with suture in the opposite direction—

is applicable in cases of mild stenosis, while in more pronounced forms the Finney or horseshoe incision has the advantage of affording a larger and freer opening from the stomach to the bowel.

In cases in which the pylorus is bound down by adhesions and in a state of marked induration, the Kocher gastroduodenostomy offers a less difficult means of procuring the same result.

The anterior long loop gastrojejunostomy has become less popular owing to the danger of vicious circle, unless provisional entero-enterostomy is employed.

The operation of choice in the majority of cases seems to be the no-loop posterior gastrojejunostomy, with or without the infolding of the ulcer as the case demands. To compare pyloroplasty with this operation, the latter has the advantage that the period of convalescence is shortened and the relief from symptoms more immediate, which alone, all else being equal, would warrant its application.

THE EFFECT OF TYPHOID VACCINATION ON THE WIDAL REACTION.

In the *Journal of the American Medical Association* of November 27, 1915, HAMILTON says he wishes to emphasize the fact, as already stated by Hirschbruch, that a positive Widal reaction in any person who has ever been inoculated with the antityphoid vaccine is of no value in diagnosing typhoid fever. The only reliable way of ascertaining the cause of continued fever when typhoid fever is suspected is by the blood culture and a total and differential leucocyte count.

THE CITRATE METHOD OF BLOOD TRANSFUSION IN CHILDREN.

In the *American Journal of the Medical Sciences* for December, 1915, LEWISOHN claims that the citrate method of blood transfusion which he described in January, 1915, has rapidly gained great popularity. Theoretical objections against the mixture of blood with an anticoagulating substance have been overcome by practical experience. This has proved that the citrated blood is clinically as effectual as pure blood. The great simplicity of the method, which makes blood transfusion as easy as an ordinary saline infusion, has, of course, widened the applicability of the former, even in smaller communities, and will certainly serve to popularize blood transfusion.

The effectiveness of citrate of soda as an anticoagulant is, of course, nothing new. In fact, we all know that for many years it has been used quite extensively in the laboratories for the purpose of preventing blood from clotting. The dose used for this purpose was one per cent.

Lewisohn has often wondered why so much time has been spent in devising technically most complicated methods (vessel anastomosis, syringes, etc.) instead of applying this well-known drug in human blood transfusion.

His answer is given in the experimental part of Lewisohn's work, which he published in detail a few months ago. These experiments brought to light two important facts:

1. That it is unnecessary to use 1-per-cent sodium citrate to prevent coagulation of the blood, but that 0.2 per cent suffices.

2. That sodium citrate used at the ratio of 1 per cent would prove fatal in large transfusions of blood (1000 Cc.).

This fact answers the question why sodium citrate has not been applied before in human blood transfusion. The fear that this anticoagulant might prove to be toxic when used in large doses is a well-founded one. That sodium citrate may be safely applied for intravenous injection of large quantities of blood, without risk or danger to the patient, is based on the fact that Lewisohn's experiments showed that a mixture of 0.2 per cent citrate of soda is sufficient to prevent coagulation.

These results of his animal experiments were of special importance on account of another publication on this subject which appeared contemporaneously with his. Weil reported that he had injected up to 350 Cc. of blood mixed with 3.5 grammes of sodium citrate. He had used this large dose of

citrate because, evidently through some error in his experiments, he had come to the conclusion that 1 per cent sodium citrate (*i.e.*, the dose used in laboratory work) was necessary to prevent coagulation. There was no warning in his paper against the possible toxicity of sodium citrate at the 1-per-cent ratio. Lewisohn's experiments show conclusively that if anybody had applied Weil's dose for a large transfusion on the human being the results would have been fatal. The citrate method, which has proved harmless and efficient, when applied at the 0.2-per-cent ratio, would surely have been abandoned after a few trials if his experiments had not pointed out the toxicity of Weil's dose and thus prevented others from using citrate at the ratio of 1 per cent.

The atoxicity of sodium citrate at the 0.2-per-cent ratio (*i.e.*, 2 grammes of sodium citrate to 1000 Cc. of blood) is best proved by the use of this method for transfusion of blood in small children. Blood transfusion in infants has great possibilities. Melena neonatorum, primary and secondary anemias, typhoid hemorrhages, some cases of marasmus, etc., yield remarkably well to blood transfusions and often show most startling results. All the older methods presented the greatest technical difficulties when applied in these little infants, and therefore blood transfusion has not been used sufficiently in small children.

The technique is exactly the same as described for adults. The donor's vein can be punctured proximally or distally, the direction to be chosen according to the individual case, whichever way the blood runs with the greatest facility into the glass receptacle. The blood is mixed in the glass jar with a 2-per-cent sterile solution of sodium citrate at the ratio of 1 to 10 (*i.e.*, 10 parts of solution to 100 Cc. of blood). For the reintroduction of the blood a very fine needle or cannula can be chosen. Thus one can inject the blood even in small children through a superficial arm vein of the finest caliber. This obviates any extensive dissection. By using so fine a needle one assures the slow injection of the blood and prevents the danger of sudden overloading of the circulatory system. A salvarsan flask is attached to a stand and the blood allowed to run into the vein drop by drop (in one case the injection of 350 Cc. thus took nearly an hour, and the three-year-old child stood this rather large quantity of blood very well, just on account of the slow injection).

IRREGULARITY OF THE HEART-BEAT.

The *Clinical Journal* of November 17, 1915, contains an article by CATTLE in which he reminds us that the presence of auricular fibrillation is an important sign of heart failure, and doubtless greatly aggravates other preëxisting mechanical difficulties due to dilatation, valvular defects, etc. Further evidence of failure, such as edema of the feet or lungs, breathlessness or orthopnea, enlargement of the liver, etc., may be eventually expected in cases in which fibrillation is persistent.

While digitalis is useful for the purpose of toning up the cardiac muscle in dilatation and many forms of cardiac weakness, it is in cases of fibrillation that results are often achieved which exceed in brilliance those due to the use of the drug in any other circumstances. Doubtless the tonic action of digitalis on the muscle and on the vagus nerve partly accounts for this favorable result, but considering that the effect is so much greater in fibrillation than in other forms of irregularity, it seems most probable that the more regular and more forcible contractions of the ventricles are due also to the "blocking" action of digitalis, by means of which some of the abnormal impulses from the fibrillating auricles are cut off. In using a powerful drug like digitalis it is necessary to have a clear conception of the conditions it is likely to benefit. There could be no greater mistake than to give it indiscriminately to every patient who has a murmur. This drug should not be given for premature systole, as the disturbance is one digitalis is very liable to produce. It may be given cautiously in heart-block. [Freely if the block is complete.—ED.]

The dose of tincture of digitalis which should be given in cases of fibrillation is 15 minims four times a day, or slightly larger doses of the 1914 preparation. In case of urgency the dose may be increased or supplemented by the injection of five-minim doses of Hoffmann's digalen. The pulse generally drops from upwards of 100 to about 60 within a week. This is a signal for withdrawing the drug for a few days. It should be resumed as the rate of the pulse increases, and continued in such doses as will keep the pulse-rate about 70. Signs of digitalis sufficiency which call for its suspension or reduction are: Slow pulse; vomiting; loss of appetite; diarrhea; scanty urine; coupled beats. Cases of sudden death from digitalis are invariably due to neglect of warning signs. Dr. Mackenzie speaks of the "characteristic coupled beats" as a sign of sufficiency, and Dr. Lewis says "the appearance of coupled heart-beats is always a danger-sign."

THE TREATMENT OF BLACKWATER FEVER.

The *Lancet* of November 20, 1915, in discussing this subject points out that it is obvious that the treatment of a disease the etiology of which is still undetermined will be attended with logical difficulties. An example of this is to be found in blackwater fever, respecting which many and diverse theories have been advanced in explanation of its probable causation. The treatment of this grave malady must necessarily depend to a large extent upon the views which the practitioner holds regarding its origin.

Burkitt, of the East African Medical Staff, reports on a method by which he has been successful in treating some serious cases of blackwater fever by the administration of potassium and sodium bicarbonate and chloride of calcium. These remedies he regards as "blood alkalinizers," and his view appears to be that the symptoms in blackwater fever are in all probability due to a lessened alkalinity of the blood, this being a "by-product" of the condition preceding hemoglobinuria, and that this "by-product" when it reaches a certain point causes a breaking-down of the blood elements. This acid poisoning (a greatly lessened alkalinity of the blood) shows itself by the presence of acetone and aceto-acetic acid in the urine.

Burkitt's careful observations seem to be in accord with those of some other authorities. Major A. C. MacGilchrist, I.M.S., for instance, stated in 1912 that his own studies in connection with the hemology of quinine and its salts had suggested to his mind the existence of a diminished alkalinity of the blood in blackwater fever, and that if the examination of the blood and urine of such a patient proved the existence of "acidemia" the prophylaxis and treatment would be simplified. He also expressed the opinion that the action of quinine, like that of the salicylates, should be guarded against by the administration of alkalies in all cases where an attck of blackwater fever was feared.

The number of cases reported by Burkitt is perhaps too small to enable us to base upon them any definite or final conclusions as yet, but they indicate that the administration of alkalies, in the circumstances which he mentions, has been attended with very beneficial results. The method is therefore well worthy of a trial by those who are called upon to treat this very grave disorder of the tropics.

THE ACTION OF RADIUM ON CANCERS OF THE PELVIC ORGANS.

SCHMITZ in the *Journal of the American Medical Association* of November 27, 1915, reaches these conclusions:

1. The best method of applying radium is the interval method by which from 3000 to 4000 milligramme hours of radium element are applied within from about fourteen to twenty-one days.

2. The alpha and beta rays must be arrested by a brass filter of from 1 to 1.5 mm. thickness.

3. The secondary rays, forming in the metal filter, are rendered inert by a rubber cot of from 1 to 3 mm. thickness.

4. Inoperable cancers that are not far ad-

vanced so that cauterization is not contraindicated yield satisfactorily to radium therapy.

5. Advanced inoperable and recurrent cancers are ordinarily refractory toward the radium rays. Any improvement is at least very temporary.

6. The patients treated with the rays after surgical removal of the organs have done well, although the time elapsed since the treatment averages eight months.

7. Patients suffering from cancer should be treated surgically, and then radiologically, and if surgery is contraindicated they should receive radium treatment, which at least relieves the subjective symptoms and often the objective ones.

8. The time elapsed since the commencement of the radium treatment in all the cases enumerated is too short to permit definite opinion as to the remote results of radium treatment.

9. Clinical and histologic studies enable us to pronounce the radium rays a valuable addition to the therapy of cancer.

10. It will require years of constant observation to demonstrate such results as anatomic cures.

11. The same measure that is applied to establish the efficacy of surgical procedure in cancer treatment must certainly be employed in radiotherapy.

THE MEDICAL ASPECTS OF EMPYEMA AND PULMONARY ABSCESS.

Discussing this subject in the *Boston Medical and Surgical Journal* of November 25, 1915, LORD says regarding treatment that it is important to remember that while surgery offers the greatest hope it is not to be applied indiscriminately to every case, and that other and simpler measures may be expected to be of distinct advantage. All patients with symptoms of sepsis should, of course, be abed. An abundance of nourishing food and fresh air are of importance. The toxemia and general sense of ill-being may be lessened by cautioning the patient not to swallow his sputum. The effect of posture should invariably be given a thorough trial. Evacuation may be favored if the patient lowers his head over the edge of the bed during a paroxysm of cough. At stated intervals and for a certain period the patient should lie with the affected side uppermost with the purpose of draining the pus into the trachea. Elevation of the foot of the bed for a time night and morning, the patient meanwhile lying at full length on the back or abdomen and without a pillow, should be tried.

In deciding between expectant treatment and surgery, the clinical aspect is of prime importance. The general appearance of the patient and the degree of sepsis, measured by the temperature curve, the pulse-rate, sweats, chills, and the white count, are valuable guides. A daily record of the cough and the amount of expectoration are important for the estimation of progress. Persistent septic features, with an increasing amount of sputum and abundant elastic tissue or lung shreds, indicate an advancing lesion. The chances of surgical relief diminish with the lapse of time. Of 31 operated cases, in 19 with a previous duration of nine months or under, 5 died and 1 was not relieved, the result thus being unsuccessful in about one-third of the cases; while of the remaining cases, 7 were relieved and 6 cured, a favorable outcome in about two-thirds of the cases. Of 12 cases with a previous duration of nine months to two years, 5 died and 2 were not relieved, the attempt at relief thus failing in about three-fifths (58 per cent) of the cases, while the remaining 5 cases obtained notable relief, but as yet no permanent cure. A more extensive lesion, multiplicity of foci, and the presence of dense induration about the affected regions probably account for the less favorable result in the more chronic cases.

The indications for or against operation are difficult to formulate, and each case must be decided on its merits, but as a general rule it may be stated concerning the acute cases that in the presence of a small process, without marked symptoms of sepsis, with purulent and not foul expectoration and without a large amount of elastic

tissue or lung shreds, an expectant policy may be followed. If, after observation for three to four weeks, recovery or marked improvement does not occur, operation should be considered. Operation is indicated, on the other hand, with an extensive process, marked sepsis, putrid sputum, and abundant elastic tissue or lung shreds. The exigencies of the individual case determine the propriety of operative interference in cases which have lasted for months or years. The condition may be intolerable to the patient or so menacing to life as to justify surgical intervention, even though little more than partial relief may be expected. Circumscribed, inextensive and single lesions offer a greater hope of success.

The advantage of surgery over the expectant treatment of abscess or gangrene cannot be estimated alone by the mortality returns, which, though sufficient to prove that surgery is the more effective, do not tell the whole story. The observation of cases before and after operation, even when the outcome is unfavorable, oftentimes indicates that the operative procedure was justified, as indicated by diminution in the degree of sepsis and the amount of foul sputum, and if performed earlier or under more favorable local conditions might well have been successful in effecting a cure.

OBSERVATIONS UPON THE ETIOLOGY AND TREATMENT OF HEART DISEASE.

In the *Boston Medical and Surgical Journal* of December 2, 1915, WHITE reaches these conclusions:

1. The male sex has been found to be more subject to auricular fibrillation, auricular flutter, heart block, and alternation of the pulse than has the female sex.

2. The older the patient with heart disease the more subject he has been found to be to serious abnormalities of the heart-beat.

3. Auricular fibrillation and alternation of the pulse occur at the same ages, and most frequently in the fifth and sixth decades.

4. Rheumatic hearts usually show normal mechanism or auricular fibrillation, much less commonly pulsus alternans.

5. A considerable percentage (36 per cent) of syphilitic hearts showed alternation of the pulse; few were fibrillating.

6. A patient with cardiac insufficiency in the course of cardiorenal disease was very apt to show pulsus alternans, either constant or more frequently only after ventricular premature beats.

7. Cardiosclerosis often resulted in the production of fibrillation and alternation.

8. Hyperthyroidism of long standing was sometimes attended by auricular fibrillation.

9. Alcohol, tobacco, tea, and coffee appeared to play no direct part in the production of serious disorders of the heart-beat.

10. Two-thirds of the patients with auricular fibrillation, one-half of those with alternation of the pulse, and one-third of those with normal mechanism in the present series showed physical signs of cardiac insufficiency.

11. Digitalis was used in 88 per cent of these decompensated cases, almost always in the form of pills of standardized leaves. Intravenous medication was used in urgent cases only.

12. Morphia was given beneficially in nearly one-half of the patients with physical signs of insufficiency, often one dose sufficing to give the patient the first comfortable night in weeks.

13. Venesection was found useful in a few urgent cases.

14. The change in diet to five small meals daily was often much appreciated by the patient.

1000 DOSES OF PHENOLPHTHALEIN.

In the *Lancet* of November 20, 1915, MCWALTER says that intestinal stasis is now made accountable for many ills, and the vogue of the motor-car and the electric tram makes walking a thing of the past. There are those who believe that appendicitis results from constipation, and certainly the laity look on daily evacuation as the first object of him who would attain health.

Distinguished surgeons are prone to write

up their first hundred cases of operation for proctitis, or what not, and it may be permitted the mere practitioner to record the results of some hundreds of doses of a given drug. McWalter has prescribed rather more than 1000 doses of phenolphthalein, and finds it probably the most useful laxative in the Pharmacopœia. It is a crystalline, odorless, coal-tar product of the formula $C_{20}H_{14}O_4$, slightly soluble in water, freely soluble in alcohol, and giving a beautiful pink color with alkalies. The dose for children is ½ to ¾ of a grain, and for adults 2 to 6 grains. He has given it usually in doses of about 1½ grains, repeated from two to three times a day; it produces loose motions in from four to six hours after a dose of 3 to 4 grains, but where smaller doses are given it brings on a natural or somewhat soft and copious evacuation only once or twice daily. It is singularly painless as a rule. This is its chief advantage. Further, it does not seem to lose its effect, at least, until it has been persisted in for a considerable time. Some observers state that it occasionally becomes absorbed, acting on the kidneys and causing backache, but McWalter has not observed this in small doses. Its action is very much like that of cascara sagrada, but probably more active and less griping. He has given it in many cases of pregnancy, and it seems almost an ideal laxative for that condition. It should not be given in tablet form unless mixed with chocolate, but it may be given in powder or in cachets.

It seems to McWalter that phenolphthalein is particularly useful in cases of intestinal toxemia. It appears to offer almost ideal advantages as a medicament in these cases, because obviously what is required is a mild antiseptic, capable of being taken for a considerable period without toxic or cumulative effects, and yet free from those irritating effects on the mucous membrane of the intestine which render most purgatives harmful in such cases. In chronic mucomembranous colitis the use of intestinal antiseptics is generally disappointing, but he thinks that phenolphthalein will be found, in doses of half a grain thrice daily, eminently satisfactory in preventing enterospasm, easing pain, checking the excessive secretion of mucus, improving the neurasthenia, and generally improving the patient's condition. Like all drugs of its kind, phenolphthalein has become much dearer since the war, but the dose being so small the actual cost is negligible.

THE INDICATIONS FOR OPERATIVE INTERFERENCE IN CASES OF AURAL DISCHARGE.

In the *Medical Chronicle* for November, 1915, SEWELL states that the signs and symptoms which singly or severally call for interference are:

1. A discharge which persists in spite of treatment.
2. A discharge which is fetid, blood-stained, or contains cholesteatomatous material.
3. Recurring polypi.
4. Carious bone.
5. Fistulæ.
6. Pain.
7. Tenderness.
8. Headache.
9. Vertigo with or without nystagmus.
10. Increase of deafness with diminished bone conduction.
11. Facial paralysis.

PNEUMODYNAMICS OF EMPYEMA.

In a paper on this topic in the *Boston Medical and Surgical Journal* of November 25, 1915, COTTON discusses the question of drainage in empyema. He says that most important of all (next to making a hole) is the cleaning out of the cavity, and here is where many operations fail. In certain cases of streptococcus type, the fluid is thin and a small hole is enough. As a rule, however, we are dealing with the pneumococcus and with the massive fibrin layers that characterize this infection. If not removed, these masses inevitably clog any drainage, as they gradually disintegrate after about the third day. It is the presence of this fibrin that makes the mere insertion of a

tube ineffective. Every empyema that will stand three minutes of operation, under light anesthesia, should have a resection of three-fourths to one and one-half inches of rib and an opening into the pleura big enough to admit a finger to sweep about and loosen the adherent fibrin masses. These may be fished out, or the patient may be so turned that the hole is at the lowest point. He will then cough out his own fibrin, and we can put the tube into a cleared cavity.

The old scheme of washing out the cavity is alluring, but not to be allowed at operation or later. Cotton has himself seen two cases of dangerous collapse from irrigation, and there are recorded so many csaes of such collapse, fatal in so many instances, that there can be no argument about the matter. What happens pathologically is not quite clear; it is, clinically considered, a vasomotor affair, and the fatal cases die a "braindeath," long supposed to be embolism. Autopsies have never shown embolism, up to the time Cotton looked the matter up. Let us call it the vasomotor effect of a pleural reflex. At all events, it is too dangerous to trifle with; we may not irrigate!

As to the exact point for drainage, it does not seem to matter much. The Children's Hospital series Cotton looked up long ago seems to prove double drainage of no sort of value. Whether we drain at the eighth rib or the eleventh is not important. We should drain behind, and the scapula is too low for drainage above the eighth. Very low drainage is interfered with by the ascent of the diaphragm during healing. Mechanically it does not seem to matter. Drainage depends on pressures, not primarily on gravity, and an opening at the level of the eighth, ninth or tenth ribs behind fulfils all requirements. Cotton usually resects the ninth just below the tip of the scapula.

As to the tube, the spool tubes (Fowler's tubes) are neatest, but usually do not fit. Two tubes clog as easily as one. Cotton's choice is a tube not less than one-third or more than three-fourths of an inch, inside bore, fenestrated, reaching well into the cavity, not too long (2 to 5 inches, according to the size of the patient), and held by a safety-pin outside the chest.

As to the dressing, it all comes down to a word: drainage is best accomplished by whatever best promotes expansion. We have here no ordinary cavity drainage; pus does not drivel out, but is, or should be, pushed out by the expanding lung.

The question of most importance then is that of reëxpansion. And the question of reëxpansion is the question of negative pressure. Cotton believes absolutely that most empyemas get well by accident; get well because a sloppy, pus-soaked gauze dressing is a very fair valve.

For thirty years past this problem has been rediscovered, and all the means we have to-day have been reinvented, periodically. Cotton did it all in 1900-1901, and was much shocked to find that Perthes and Revilliod had done it years before. It has all been done since, also.

FERMENTED MILK AND WHEY IN INFANT FEEDING.

In the *Medical Record* of December 4, 1915, MUCKLOW states that the following rules are imperative:

Use certified milk. The bottles of milk when received from the dealer and the jars containing the completed mixture should immediately be placed in the ice chamber of a refrigerator, either in the middle of the chamber with a cake of ice on either side of and in contact with them, or what is better, but usually impractical, in a pail full of cracked ice. They should be kept in an upright position until needed.

Use a Chapin cream dipper, that has been accurately made to hold exactly one fluid-ounce, to measure the milk, whey, water, and milk-sugar. The first dipperful from a bottle full of milk should be removed with a teaspoon to avoid spilling.

A dozen vials of a culture of Bulgarian bacilli should be purchased as often as required direct from the laboratory of the manufacturer, immediately placed in the ice chamber of a refrigerator next to the ice, and there kept until used.

The water used in the formulas should be cold and should have been either distilled or boiled for five minutes.

All utensils should be boiled for five minutes just before using them.

Feedings should be warmed by standing nursing bottle containing same in water not hotter than the hand can bear, as too great a heat will toughen the curd.

Use a medium-sized nipple with a single opening. Make opening the proper size by running through it the red-hot point of a No. 7 sewing needle, the eye end of the needle being inserted into a cork to protect the fingers. After each nursing turn the nipple inside out, scrub clean, and place in borax water (one heaping teaspoonful of borax to a cupful of cold, boiled water).

The whey is prepared as follows:

Skim off from the bottle from which the top milk for the formula has been removed enough additional dipperfuls to make a total of 8 dipperfuls removed from the bottle.

Pour the resulting skimmed milk into a quart preserve jar.

Add 3 teaspoonfuls of a good essence of pepsin and stir.

Seal jar and stand in a kettle full of water as hot as hand can bear for one-half hour.

Break up the curd with a long-handled fork.

Strain through two thicknesses of the finest-meshed cheese-cloth one foot square placed on a strainer over a pitcher.

THE PROBLEMS OF NEPHRITIS FROM THE CLINICAL STANDPOINT.

In the *American Journal of the Medical Sciences* for December, 1915, ELLIOTT reminds us that the history of diet therapy in nephritis is dominated by the principle of protein restriction. Modern research during the past twenty years has borne particularly on the mechanism and consequences of retention in nephritis, and the idea of sparing the kidney has been the first rule in diet. In acute nephritis, and during the acute inflammatory exacerbations of chronic nephritis, a large protein intake is undoubtedly unphysiological and exercises an unfavorable influence. During the stormy but relatively short session of acute nephritis the eliminative functions of the kidneys are carried on with difficulty, the renal filter at times refusing even to pass water through it. Attention should consequently be concentrated on the diseased organ, and until convalescence is established, low food intake, even at times to the point of starvation, will best serve the interest of the patient. In such cases for the period necessary the nutritive problem may be submerged in the imperative needs of the choked and irritated kidneys.

In chronic nephritis we are compelled to keep the general condition of the patient more in view. Granting the clinical justification of protein conservatism in the diet therapy of chronic nephritis, it is probable, speaking generally, that its severity and duration are much less influenced by manipulation of the protein ration than is commonly supposed. Efforts in this direction have hitherto been governed by empiricism without scientific means of control, and we consequently have been far too much influenced by routine in the hope of controlling nitrogen excretion, which, after all, can hardly be considered an accurate measure of the gravity of a case. In chronic nephritis, nitrogen excretion is variable beyond explanation, and peculiar kinds of diet do not appear to influence it to any important extent.

So far as can be seen at the present time the only reliable criterion available for regulating the protein intake in nephritis is the determination of the amount of waste nitrogen retention by blood analysis. That it is possible to reduce the urea and waste nitrogen of the blood to normal or less is abundantly proved by the feeding experiments of Folin, Denis, and Seymour, and Frothingham and Smillie. Cases with considerable retention require a restriction of protein, and by this means a return to normal figures may be brought about if the azotemia be not too severe. In cases of outspoken uremia no marked reduction of the azotemia results from a protein-free

diet. Folin, Denis, and Seymour state that the response to the phthalein function test can be reduced by one-half before abnormal accumulation of non-protein nitrogen takes place in the blood. This estimate is in keeping with Agnew's statement that at 40 per cent phthalein excretion cumulative phenomena appear in the blood. In clinical practice then it may be assumed that accumulation of waste in the blood begins at about the point where response to renal function testing by phthalein drops to 40 per cent in two hours.

Routine observations with this readily available test may thus enable one to appreciate, with much greater precision than is possible from clinical observation alone, the point (40 per cent or lower) where positive protein restriction should begin. When the functional index is normal or nearly normal in contracting kidney it is difficult to understand what harm will result to the organs, provided no inflammatory element is present, from a protein allowance based on physiological needs. This being the case, we need no longer feel that some trifling miscalculation in the protein ration will jeopardize the welfare of the nephritic patient, nor that it is necessary to draw fine distinctions between various forms of protein. Aided by periodic functional testing to check up the condition of the kidneys, and with our present knowledge of food requirements for good nutrition, the dietotherapy of chronic nephritis may be adapted with reasonable safety, if not, perhaps, with accuracy, and with due realization that in so chronic a disease general nutrition and kidney conservation should stand on a parity.

TARSAL MASSAGE IN TRACHOMA.

To the *New Orleans Medical and Surgical Journal* for December, 1915, DIMITRY contributes a paper on this topic. He says that this operation is a great advance in ophthalmology, and the improved technique of Vossius and Kuhnt has added increased benefit.

Dimitry's method of performing this treatment in the disease consists chiefly in the manipulation of a metal or glass rod about 8 inches in length and about ¼ inch in diameter. One end of it is smoothly rolled with cotton for about 2 inches and moistened in some such solution as normal salt, boric acid, boroglyceride, or, as is his preference, 1:5000 bichloride. Precede the manipulation by thoroughly flooding the conjunctival folds; if possible dilating the pupil and completely cocainizing the conjunctiva. The dilatation of the pupil should not at any time be neglected in the course of the work. After these preliminaries the lid is turned over. The cotton-tipped end of the rod is now inserted under the tarsus, and in most cases deep into the retrotarsal folds; pressure is made upward and the lid is rolled. The thumb that holds the lid over is pressed down upon it, producing undulations in the tarsus. The contents of the follicles are now pressed out, making the tarsus pliable. In following out the above indications the greatest care must be used against injuring the cornea, not permitting the rod to scrape the conjunctiva. The same method is employed in treating both lower and upper lids. The technique, somewhat difficult of performance at first, soon becomes simple with practice.

The rod manipulation is performed every other day. The patient is encouraged to attempt certain massage by pinching his own lid, and at intervals this is also carried out by the ophthalmologist. The tarsus is caught between the index-finger of both hands, and is squeezed and massaged.

The results obtained have been gratifying to Dimitry and the members of his staff, and they believe that in every case which has permitted of sufficiently long treatment they can claim a cure. The treatment generally consumes from three to six months for perfect results. Tarsal massage has been used at the Eye, Ear, Nose and Throat Hospital of New Orleans for years, and if Dimitry is correct it was thought there that certain astringents employed produced the results and not the tarsal manipulations, as advocated for the first time by him. The method has never been published by the above named institution.

Dimitry states that after an extended sojourn in the East, where he frequently visited many large eye hospitals and saw numerous cases of trachoma, he accepted at that time as superior the grattage method so highly advocated to-day. Its use in New Orleans, however, met with severe criticism at the hands of Dr. H. Dickson Bruns, who sternly objected to any technique that would produce scar tissue in what is already a scar tissue disease. Dimitry gives full credit here and now to Dr. Bruns for having stimulated in him a better method than the accepted grattage. Massage is by all means more logical and in every respect superior.

PREGNANCY AND DIABETES MELLITUS.

In the *Boston Medical and Surgical Journal* of December 2, 1915, JOSLIN says that it would seem the secret of success in the treatment of pregnant women with sugar in the urine is:

1. To have the patients under constant supervision throughout the course of the pregnancy and for some months after confinement.

2. Treatment should follow exactly the same methods which are employed in the treatment of the usual case of diabetes.

3. Even when sugar appears to a slight extent in pregnant women, it should be carefully watched and controlled by diet.

4. The advantages of a Cæsarian section should be borne in mind.

5. Whereas ether anesthesia may work well, it is probably not so safe as gas and oxygen. If ether should be used, as brief an anesthesia and as little ether as possible should be employed.

6. Finally, many statements occurring in the literature of pregnancy and diabetes must be revised. Pregnancy in diabetes does not demand immediate abortion, even if acidosis is present. If pregnant diabetic cases are suitably managed, they will very likely abort less frequently. It cannot yet be accepted as proven that pregnancy aggravates a diabetes. It is quite possible that the reason for a patient with diabetes becoming worse during pregnancy is simply due to the ingestion of an unusual quantity of food. Reliable data upon the carbohydrate tolerance of diabetic patients before and after pregnancy are not available, although Maase records a single such instance. Nursing is not contraindicated following confinement, for the diversion which it affords the patient may offset the extra demands thrown upon the metabolism. Too few data have been accumulated regarding the blood sugar of pregnant women to warrant conclusions. The same statement may be made about the alleged excessive weight of children of diabetic mothers. The next few years may show that pregnancy can take place in diabetic patients far more readily than has been supposed. It is certainly true that with the improvement in the treatment of diabetic patients, diabetic women will be less likely to avoid pregnancy.

ARTIFICIAL PNEUMOTHORAX IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

SACHS reaches these conclusions in the *Journal of the American Medical Association* of November 27, 1915:

Experience with artificial pneumothorax in the treatment of pulmonary tuberculosis is gradually modifying the sphere of its application. The trend is toward its use, regardless of stage, in all progressive cases (particularly with unilateral involvement) which fail, after sufficient trial, to respond to strict sanatorium regimen.

Complications incident to the employment of this method, the great importance of continuous strict observation and thorough clinical, laboratory and Roentgen study of each individual case, the rest periods essential after each reinflation, the inability of outlining in advance the time of reinflations—in short, the close dependence of each successive step in pneumothorax therapy on the varying condition of the patient—are all factors which call, in the majority of cases, in the interest of safety and best results, for hospital or sanatorium supervision, at least for a few months, of each individual case in which the method is

being applied. Close attention to every important detail of technique, as well as strict asepsis, is also less of a problem, under such conditions, regardless of the excellent results obtained by some observers, in dispensary and office practice.

The present tendency, grown out of experience, is toward greater conservatism in the selection of cases, a selection based on thorough preliminary study and full consideration of the possible effect of compression in the individual case. Conservatism needs to characterize each successive step in the gradual attainment and subsequent maintenance of a satisfactory compression, with avoidance of too frequent reinflations and excessive intrapleural pressure. This attitude is very important, with a method the application of which cannot be subject to rule but is dependent on the condition of each individual case.

Through improvement of various details of technique and greater conservatism of action, pneumothorax therapy is gradually finding its defined place in the treatment of cases of pulmonary tuberculosis which do not yield to other methods.

THE PREVENTION OF RELAPSE AFTER EMETINE.

The *British Medical Journal* of November 13, 1915, states that Dr. Nathan Barlow—who is the medical officer of a plantation at Cuyamel, Spanish Honduras—has attempted to determine the percentage of permanent cures of dysentery after various methods of treatment. He recognized that the cases to be used for statistical purposes must have been carefully examined and recorded, that not less than six months must have elapsed since the cessation of all treatment, and that the cases must be free from complications which might confuse the results. In particular, he, like others, had found that intestinal infection with flagellates, ciliates, or metazoa made the removal of the amebæ much more difficult. He was able to study 400 cases in the Charity Hospital in New Orleans, and 300 cases at Cuyamel. He found that only 18 of the cases in New Orleans and 40 of those at Cuyamel fulfilled all the conditions he had laid down.

The most important result of his inquiry appears to be that the initial treatment with emetine must be very thorough. The conclusion he draws from the examination of these 58 cases, which seems to have been most carefully carried out, is that about 80 per cent or more of cases of infection with entamœba histolytica remain free from relapse for seven months or more, if treated for at least ten days continuously and with not less than one grain daily of emetine. If treated for less than nine days relapse is, he considers, almost inevitable. This is in accordance with the experience of British authorities, who, we believe, advise that the initial period of treatment should be twelve days. The simultaneous administration of ipecacuanha does not diminish the number who relapse, but its subsequent administration does. He holds that a permanent cure is possible in a shorter time with emetine than with ipecacuanha.

Cases of hepatitis and liver abscess usually remain free from either intestinal or hepatic relapse, partly on account of the more thorough treatment they receive. The plan which he considers best can be carried out only with intelligent patients who are within reach of a competent laboratory worker. One grain (or more, for one or two days) is given daily for fifteen days, followed by 60 to 80 grains of ipecacuanha for from five to twenty days, according to whether intestinal irritation is produced or not. The bowels are cleansed by a saline at the beginning of treatment, and about every five days. If there is either diarrhea or colic, it is checked by opiates, usually paregoric, in small repeated doses, until comfort is obtained. If severe diarrhea is present, liquid diet and rest in bed are required until the symptoms improve, when a more nourishing diet and gentle exercise are allowed. On discharge the patient is instructed to return once each month for examination of a fresh stool obtained after a saline cathartic. If either amebæ (of any variety) or cysts of entamœba histolytica are found, the treatment is repeated. The advantages

he claims for this plan are—first, that if amebæ are actually found, patients will readily submit to a second treatment, while even intelligent patients might resent this second treatment merely as a prophylactic measure; secondly, he believes that when a patient is clinically well, and with merely a latent infection, the second course of treatment will usually result in a complete cure; and thirdly, he points out that the repeated examination of cases results in the accumulation of data which will make it possible to determine the dose and duration of treatment necessary for permanent cure, and is therefore of the highest scientific and practical value.

EXTRACT OF PITUITARY GLAND IN LABOR.

In the *New Zealand Medical Journal* for October, 1915, JAMIESON says that regarding its relative efficacy in primiparæ and multiparæ, extract of pituitary is in striking contrast to the scopolamine-morphine method of anesthesia, which, in his experience, is very useful in primiparæ, but of little value in multiparæ. In primiparæ the two methods of treatment may sometimes be advantageously combined. The opportunity of the restfulness gained by the narcotic may be taken to get a little extra vigor into the uterine contractions at the proper time by means of pituitary; and the hours of ordeal are thus made lighter and shorter.

The old-time indications for the use of forceps are considerably modified by the advent of pituitary extract. Perineal rigidity, small degrees of contraction of the pelvis, delay due to malposition, such as occipitoposterior, formerly calling for instrumental aid, may now frequently be overcome by the extract, though care must be exercised in its employment in such circumstances. Uterine inertia as an indication for forceps is now entirely eliminated.

In prepituitary days 28 per cent of Jamieson's cases were instrumental deliveries. Since he began using the drug he has used forceps in only 10 per cent. Such a reduction in mechanical intervention is in the highest degree desirable.

The extract facilitates separation of the placenta, and markedly diminishes hemorrhage during and after the third stage. This is most noticeable, and is a point of very great moment, as the character of the puerperium depends so greatly on the amount of blood lost. Unlike ergot, pituitary may be safely employed during the third stage, because it only enhances the vigor of the normal, physiological uterine contractions, and does not, like ergot, produce an abnormal form of contraction.

Apart from these three conspicuous benefits, it is worth while giving the extract for the sake of the undoubted well-being the patients experience after its use, which one notices in great contrast to the pallor and weakness so often seen after a chloroform and forceps delivery. It is of value also in preventing tympanites and retention of the urine. Its effect and merits are quickly appreciated by patients. So striking are the results to them that Jamieson understands it is known in his district by the not inapt soubriquet of "the doctor's blasting powder."

Of its usefulness as an agent for inducing labor Jamieson cannot speak, as he has not had occasion to try it for that purpose.

What are the disadvantages? For the proper cases there do not appear to be any. But the cases should be chosen with discretion. Jamieson's earliest experience stands as a warning that patients with flabby, dilated hearts are not suitable subjects. Again, eclamptics are bad subjects. It has been recommended to hasten the completion of labor in eclampsia. But the rise of blood-pressure consequent on the administration of pituitary extract may easily be imagined likely to precipitate convulsions in eclamptic toxemia. And Jamieson has actual experience to show that this is so.

Care must also be taken that pituitary is not used to overcome difficulties that cannot reasonably be expected to give way before uterine power. Its rash employment and use in obstructed labor are likely to give the gynecologist a great deal more repair work than he had before its invention. Jamieson's rule is never to inject it until the os is

practically at full dilation, or felt to be very readily dilatable. Used so, and with proper regard to the patient's constitutional condition, no ill can possibly result.

RECTAL ANESTHESIA IN THYROIDECTOMY.

LATHROP states in the *Pennsylvania Medical Journal* for November, 1915, that he has operated upon one hundred and eleven cases of goitre from June, 1914, to September 9, 1915, under this form of anesthesia, and from his experience with a large number of these operations, before adopting it, he is convinced that we have an ideal method, and one superior to that by inhalation. He believes:

1. It is most valuable in head and neck operations.

2. There is no fear, as is so often seen in the usual method.

3. The pulse and respiration as a rule remain near normal, or do not vary much from their condition when the operation was commenced. If rapid, as in hyperthyroidism, it remains rapid, but does not increase as when fear has added to the apprehension of the patient.

4. There is less tax on the lungs and kidneys.

5. Operations can be done without the knowledge of the patient, which is surely valuable, and must play some part in anoci-association, while Crile's technique can be carried out, if desired.

PITUITRIN IN SURGERY.

In the *Chicago Medical Record* for November, 1915, GRIFFITHS reaches these conclusions as to pituitrin in surgery:

1. The removal of the hemispheres in an animal does not arrest its power to execute the normal bodily movements under external stimulations, because these movements are dependent on functional structures situated in the base of the brain and in the spinal cord, and which the posterior pituitary body probably governs. It has been suggested that while the medulla oblongata is an important consociating organ, its centers receive impulses from and are controlled and coördinated by a posterior pituitary body. Unlike the anterior lobe, which is said to influence oxidation and metabolism, the posterior lobe is not necessary to life, since it is but a coördinating structure.

2. The pituitary body is very essential to life, and has a great influence upon growth and development, as well as upon metabolism.

3. The first dose of pituitrin lowers the blood-pressure, and the second tends to raise it.

4. Pituitrin stimulates the muscles of the heart, intestines, bladder, respiration, and general vitality of the patient, as well as the kidneys.

5. It is an important adjuvant in post-operative treatment of any surgical operation, properly administered, and lessens hemorrhage and shock as well.

6. If pituitrin is used, as suggested, no further treatment will be necessary in many cases. The mortality of operations will be lessened, and the patient will make a more rapid recovery.

TREATMENT OF SYPHILIS IN THE PRIMARY STAGE.

In the *New York State Journal of Medicine* for November, 1915, KEYES emphasizes what we have pointed out several times, namely, that the golden dream of Ehrlich, the therapia sterilisans magna, that was to cure every syphilitic by a single injection of salvarsan, has not been realized. It is doubtful whether syphilis can truly be aborted at any time after its generalization. Perhaps abortion is possible after the Wassermann reaction has become positive, and even after secondary somatic lesions have appeared. But the real opportunity to treat syphilis, so as to cure it, presents itself in those few days that intervene between the appearance of the chancre and the appearance of the Wassermann reaction.

Therefore, the first essential for the proper treatment of syphilis is an early diagnosis. This diagnosis is usually made through the discovery of the spirochæta pallida in the secretion of the lesion.

This insistence upon an early laboratory diagnosis runs counter to all the sober teachings of our forefathers. They maintained, very properly, that before the stigma of syphilis was placed upon the remaining days of a patient, the clinician must be certain in his diagnosis, beyond peradventure. But with the possession of salvarsan, and the possibility of a real cure of syphilis in these few flitting days before generalization of the disease, our whole attitude is changed. We must now make our diagnosis before these same secondary lesions appear.

Let the writer not seem to depend upon the spirochæta investigation alone. He would no more accept the diagnosis of syphilis upon a single unsupported finding of spirochætæ than upon a single unsupported Wassermann reaction. The laboratory can err quite as brilliantly as the clinic. The spirochæta diagnosis of chancre must be supported by clinical manifestations that suggest chancre. If there is doubt, or conflict, a section of the lesion should be excised for confirmatory diagnosis.

With the diagnosis thus established, what shall be our treatment? The writer submitted this question in the form of a circular letter to ten syphilologists in New York City. Their answers reveal the following opinions: Two of them do not use abortive treatment. The remaining eight employ it. Yet only one of those who do not attempt abortive treatment awaits the appearance of a positive serum reaction or of secondary lesions before beginning treatment. All the others begin treatment at the earliest possible moment, on the discovery of spirochætæ. Of those who attempt abortion of the disease, only two practice excision of the chancre. One employs neosalvarsan, the other old salvarsan.

The minimum number of doses of salvarsan is two, according to two gentlemen; four, according to one; five, according to three; and six, according to two. In other words, almost all insist upon at least four doses. The salvarsan is apparently always employed intravenously. The interval between injections is usually one week, with variations of a day or two. One gives five doses at two- or three-day intervals.

Two gentlemen employ Gennerich's treatment, which implies the use of mercurial injections with the salvarsan.

This treatment is described as follows by Fordyce, in the *Journal of Cutaneous Diseases,* November, 1914:

In primary syphilis, with a negative Wassermann reaction, give six injections of salvarsan with the following intervals: The first four every five days, the fifth after seven days, and the sixth after seven to eight days. Intramuscular injections of calomel, 0.05 to 0.07, are begun at the same time and continue until twelve to fifteen are given. This course usually suffices to sterilize the patient in the primary stage. In older cases of primary syphilis a second course of salvarsan may be needed.

Regulate the dose according to the body weight and condition of the patient, giving to men from 0.3 to 0.45 gm., and to women 0.15 to 0.3 gm. He never gives 0.6 gm., as he considers it near the toxic limit. He seldom uses neosalvarsan, except at times to women, or where a mild effect is desired.

After the completion of this first course of treatment every one of these gentlemen employs injections of mercury. The insoluble calomel, gray oil, or salicylate are employed by six, the soluble compounds by two (while two made no mention of the salt employed). Four gentlemen (perhaps five) give supplementary courses of salvarsan, even though the Wassermann reaction never becomes positive, and no lesion appears. The balance only employ mercury.

The duration of the subsequent course of treatment is not clearly stated in the answers to the writer's inquiry; but apparently it averages not longer than three months in most instances. (The writer prefers to continue at least a year.) Thereafter the cure is confirmed by the absence of symptoms and the negative Wassermann reaction. One repeats the blood test as often as once a month at first. Two are satisfied to let six months intervene. The last Wassermann reaction is made and the patient declared cured, at the end of one year by

two reporters, at the end of two years by two, at the end of three years by two, and at the end of four years by one.

It is not clear how many require a provocative injection of salvarsan or a Wassermann test upon the spinal fluid as part of the final evidence.

The writer has enumerated these opinions in detail in order to point out the striking similarity of opinion which they voice. They say, almost unanimously, that the treatment must be prompt; that we must depend upon the old, rather than the new, salvarsan; that the dose must be from 3 to 5 decigrams, rather than a larger one; that the injection must be made intravenously, and must be repeated a number of times; and that the treatment must be followed by a course of mercurial injections in order to insure the cure, and more particularly for the purpose of preventing relapses of syphilis in the nervous system in those patients who fail of a cure. While, finally, confirmation of our success is to be had by repeated Wassermann reactions made every few months, and continued for at least one year, or if the writer may consult his own preference, for two or three years followed by a provoked Wassermann, and the usual tests of spinal fluid.

With these conclusions the writer heartily concurs. The patient who is so treated may expect to be entirely relieved of his disease. The writer uses the word "expect" advisedly, for we have not yet lived long enough to be sure that even these cases are definitely cured. But we are in a position to state that they have nothing to lose by this treatment and everything to gain.

It has been feared that abortive treatment, by killing most of the spirochætæ in the patient's body, might inhibit his reaction to the disease and thereby encourage grave relapse.

This fear has been verified in the so-called "neuro-recidiv"—*i.e.*, syphilitic relapse in the nervous system occurring after the administration of salvarsan, following the outbreak of the secondary lesions. Such relapse in the nervous system is actually an outbreak of syphilitic lesions due to spirochætæ not eliminated by the salvarsan. It is not to be feared in patients who are treated before the Wassermann reaction becomes positive, nor indeed in any patient who follows the combined treatment with salvarsan and mercury, as suggested above.

The one type of relapse to be looked for after the employment of abortive treatment in the primary stage of the disease is a relapse of the chancre itself; this is likely to occur several months after the disappearance of the initial lesion. The new chancre appears on precisely the same spot where the old one was, for it is but a recrudescence of the latter. Its course is that of the original lesion: It begins as an eroded papule, where spirochætæ may be found; then the satellite glands enlarge, the Wassermann reaction becomes positive, the secondary septicemia ensues.

Such a relapse occurring several months after the disappearance of the original chancre, and at a time when the patient may consider himself cured of the original infection, may well have been preceded by a sexual contact and be considered a reinfection with syphilis. Yet the writer has seen one case follow this course without any sexual exposure, and others have noted the same phenomena. It is worthy of note, therefore, that the so-called reinfection with syphilis, a few months after abortive treatment, is likely to be nothing more than evidence that the treatment was not wholly successful.

The percentage of successes with abortive treatment we have no means of judging, for all of us have seen individuals remain apparently well for several years after an abortive treatment which we would nowadays consider insufficient.

Such patients seek permission to marry, and the prevailing opinion appears to be that the syphilitic may marry, if his Wassermann remains negative and he remains free from lesions for two years after the cessation of treatment. But we have not yet enough experience to settle this question absolutely. The writer feels safe for the present in adhering to the old rule of five years from chancre to matrimony.

Keyes concludes that:

1. Diagnosis of syphilis before Wassermann reaction becomes positive is the foundation of abortive treatment.

2. Abortive treatment consists of repeated intravenous injections of old salvarsan, followed by injections of mercury.

3. The success of abortive treatment must be verified by repeated blood examinations, finishing with a provoked Wassermann and the spinal fluid tests.

4. The failure of abortive treatment may be shown by a succession of symptoms exactly simulating reinfection with syphilis.

THE MIDWIFE PROBLEM.

PAINE contributes to the *Boston Medical and Surgical Journal* of November 18, 1915, a paper on this subject and states that from his study of the various facts and opinions presented, the following conclusions may be reasonably drawn:

1. Education in obstetrics in the various medical institutions in this country is considerably below the standards achieved in other branches of medicine.

2. The practice of obstetrics generally is very materially below the standards of general medicine and surgery, due, first, to the educational deficiency in this subject; secondly, to a low type of midwife service, the result of a practical absence of regulation; and thirdly, to the fact that the general attitude of the public at large toward the practice of obstetrics is not in keeping with the dignity of that subject.

3. No comprehensive and far-seeing plan is generally being developed to cope with the situation as it presents itself.

4. There is a distinct tendency in many quarters to adopt the midwife as an institution after the manner of its conduct in the countries of Europe.

5. While the whole subject of the proper obstetric care of patients needing this service is one of great economic importance to the State, there is practically no attempt at meeting this situation by the State.

6. It would seem that our method of government is not adapted to the rigid requirements which the properly regulated midwife demands.

7. The State should assume the management and control of this work, which is of the greatest economic importance, as readily and as well as it assumes the burden of caring for such of its citizens as are incapacitated by ill health or age.

POISONING BY MERCURIC CHLORIDE AND ITS TREATMENT.

In the *Archives of Internal Medicine* of November 15, 1915, LAMBERT and PATTERSON tell us that the treatment, as it is formulated by them at present for cases coming under observation early, is as follows:

The first indication is to give the patient the whites of several eggs and then to wash out the stomach thoroughly. This has usually been done before the patients are admitted to the hospital. On admission, the stomach contents are expressed and examined for mercury, the stomach is thoroughly washed, and a pint of milk introduced. If no stomach contents are obtained before lavage, then the lavage water is examined for mercury. Urine passed spontaneously, or that obtained by catheter, is examined for mercury. The metal appears in the urine in from three to twenty-four hours after it has been swallowed. If more than a day has elapsed since the poisoning occurred, a stool should also be examined for the poison. If the first lavage does not allay the nausea and vomiting, it is repeated after an hour, and the following routine is begun as soon as the stomach will permit:

1. The patient is given every other hour 8 ounces of the following mixture: Potassium bitartrate. 1 drachm; sugar, 1 drachm; lactose, one-half ounce; lemon juice, 1 ounce; boiled water, 16 ounces. Eight ounces of milk are administered every alternate hour.

2. The drop method of rectal irrigation with a solution of potassium acetate, a drachm to the pint, is given continuously. The amounts of urine secreted under this treatment are very large. In one case 269 ounces were passed in twenty-four hours on the fourteenth day of treatment.

3. The stomach is washed out twice daily.

4. The colon is irrigated twice daily, in order to wash out whatever poison has been eliminated in that way.

5. The patient is given a daily sweat in a hot pack.

It is imperative to emphasize the necessity of keeping up the treatment with the colonic drip enteroclysis day and night without interruption. It entails discomfort for the patient, but the victims of accidental poisoning are always willing to do anything to recover from their plight, and the attempted suicide usually repents rapidly of his error, and the hope of his life being saved stimulates his patience and desire to coöperate.

PYELITIS: ITS CLINICAL SIGNIFICANCE.

In the *New York State Journal of Medicine* for November, 1915, WYNKOOP deals with this important but overlooked subject. He points out that pyelitis, though occurring more often in girls, occurs frequently in boys, especially at the nursing period. Look carefully into so-called cases of intestinal colic, with low temperature, slight abdominal pain, or with frequent urination, occurring in male babies.

Failure to gain in weight and occasional temperature of 101°-102° in the evening, with normal temperature most of the day and variable appetite, may not be due entirely to intestinal disturbance.

Bear in mind the fact that such a condition as pyelitis can exist, and always expect it when the symptoms assume an indefinite character.

Many cases are recorded in which all clinical signs have escaped detection until a careful urinary analysis was made.

In these cases if fever, pain, anemia, frequent or painful urination occurred, the symptoms were so slight as to escape notice.

Therefore the writer's warning is, in all cases, whether male or female infants, showing that there is some hidden focus somewhere that is causing trouble, think of pyelitis, though the typical symptoms may be absent.

In every case of intestinal colic in a nursing baby think of the possibility of a pyelitis. In low fever with indefinite symptoms watch the urine constantly.

Therefore the writer would again warn us to make complete and thorough urinary analysis in all cases, a practice which is too often neglected.

By strict attention these mild attacks of bowel disturbance, with a little fever, that seem to arrive from no cause whatever, may prove to be pyelitis. In cases of abdominal pain, although even very slight, realize that there are other organs besides the stomach and intestines that may cause trouble.

A review of pediatric literature does not contain as many references to pyelitis as it would seem to warrant.

Most authors mention it as a cystitis, cyst-pyelitis, pyelonephritis, but from personal experience it seems as though this disease should receive more attention than it has, for, as experience comes with years, so does the practical recognition of the prevalence of pyelitis far in excess of what we have been taught to believe possible.

The treatment will be mentioned briefly. Urotropin and potassium citrate are probably the most used remedies. In Wynkoop's experience potassium citrate has been more effective than urotropin. Plenty of water must be given the patient, and it is also desirable to render the urine alkaline. [This contradicts views generally held.—ED.]

A warning is here again issued that relapses are common, especially in long-continued, unrecognized cases, and the severity of the symptoms may be astonishing. Attention, however, to every detail of right living, that is so often neglected in these children, together with proper medication, will usually finally effect a cure.

It has often been a source of serious concern to see these little ones who have suffered from the ravages of an unchecked pyelitis, present themselves in an emaciated and almost hectic condition.

Wynkoop warns us in regard to treatment. We should not neglect the general hygienic measures that are so important to

improve the child's resistance. All measures may fail if we overlook a chronic constipation, improper diet, or lack of sufficient fluids in the system.

Tonics are of use in certain cases. So far the vaccines have not proved to be as effective as hoped for.

In presenting this paper, the points that seem to the writer to be most important are these:

First, pyelitis is without doubt a much more common disease than was formerly supposed.

Second, its occurrence in male babies is much more frequent than is usually considered possible.

Third, its symptoms are, in mild and atypical cases, easily overlooked.

Fourth, in all diseases of infancy and childhood frequent and complete chemical and microscopic examinations of the urine should be made.

Fifth, in a condition which presents unexplainable symptoms, always think of the possibility of a pyelitis.

Sixth, treatment has to be persisted in for a long time, as pus will be present in the urine, as a rule, after all clinical symptoms have subsided.

Seventh, relapses are very common, and oftentimes these cases are very stubborn in yielding to treatment.

OVARIAN TRANSPLANTATION.

FRANKLIN MARTIN (*Surgery, Gynecology and Obstetrics,* November, 1915) concludes an admirable résumé of this subject as follows:

Careful sifting of the accumulated literature of ovarian-tissue transplantation leaves a feeling of disappointment as to its surgical value in the mind of an impartial observer.

Autotransplantation of ovarian tissue, as the operation is at present practiced, retards and modifies the symptoms of the artificial menopause that is precipitated by castration in a definite number of cases, depending undoubtedly upon the ability of the graft to retain its vitality in the new environment.

The percentage of successful results in the autotransplant seems to be as large where the simplest technique is employed, using small pieces of ovaries tucked into pockets of well-vascularized tissue, as when a more complicated technique is employed with an attempt to definitely couple up the blood-vessels.

The fact that homotransplants and heterotransplants are failures, made with the same technique that is employed for successful autotransplants, demonstrates that there is a definite antagonism between the tissues of different species.

Occasional reports of successful homotransplants and heterotransplants encourage one to hope that in some way this antagonism of tissue will be overcome, and more successful work may result because of the greater precision this would make possible in selecting more normal tissue.

In this relation Vineburg's study of the fate of ovaries after hysterectomy is of interest. He notes that there is still considerable uncertainty as to which tissue in the ovary is responsible for the production of the "internal secretion."

While it is established that the follicles go through the various stages of development in the conserved ovary or ovaries after the uterus has been removed, it is not at all certain that the function of the internal secretion continues uninfluenced by the great changes in the blood supply, and by the traumatism to which the pelvic sympathetic nerves are subjected as a consequence of the operation.

It is still a disputed point as to what degree the climacteric syndrome is due to the removal of the ovaries, and to what degree to the injury to the pelvic nerves incident to the operation.

Clinically it has been found that the freedom from the climacteric syndrome in hysterectomized women, in whom the ovaries have been conserved, is only relative to that which obtains in the same class of women in whom the ovaries have been removed. A generous estimate would be 20 per cent in favor of the former.

To obtain the benefits claimed by the advocates of conservation the ovaries should

be retained at all ages and not limited to those under forty-five years, as it has been shown that of the women who suffered most severely from the artificial menopause 23 per cent were over forty-five years of age.

Subsequent disease of the conserved ovary, such as cystic degeneration, malignant growth, inflammatory processes leading to adhesions, and pain calling for a second operation, does occur in some cases, the number, no doubt, being much larger than would be inferred from the records found in the literature.

In view of the foregoing conclusions the writer is of the opinion that the doubtful clinical advantages accruing from retaining the ovaries in hysterectomy are more than counterbalanced by the risks to which the patient is subjected from subsequent disease and adhesions of the conserved ovaries. The writer would therefore not retain the ovaries in any case of hysterectomy, unless he could leave enough of the lower segment of the uterus with its endometrium to insure the function of menstruation (Zweifel's method). For in his experience the knowledge imparted to the woman that her ovaries have not been removed has little significance or moral effect, when she learns that she will no longer menstruate.

GAS POISONING.

Hill (*British Medical Journal*, Dec. 4, 1915) notes that Lehmann long since showed that if gases are to be used in warfare they would be chlorine or bromine.

We are told that a typical case on admission is cold, with a subnormal temperature, conscious but restless, with pulse slow and full (except in the collapsed cases). The face is cyanosed, intensely so in many cases, and the expression strained and anxious. The posture varies. In some cases the patient sits propped up, with head thrown back, gasping for breath; in others, he lies on his side, with his head over the edge of the stretcher in an attempt to aid expectoration. The respirations are jerky and hurried, often numbering 40 to a minute, and are associated with a choking cough, accompanied by a varying amount of frothy expectoration. With each inspiration the chest is expanded to its fullest, all the auxiliary muscles being brought into play just as in an asthmatical paroxysm.

This is the first or asphyxial stage, which, if the patient survives, gradually passes off after some thirty-six hours. Can we wonder that such long-lasting, intense dyspnea should produce nephritis, accompanied as it is with convulsive breathing, which just maintains the cerebral circulation within viable conditions at the expense of the abdominal circulation? Major Broadbent records a case in which he believes a cusp of the aortic valve was ruptured in the struggles for breath.

"After the first stage the patient falls into a sleep, and awakes feeling much better. But after a few hours of comparative quiet symptoms of bronchitis begin to manifest themselves. In the majority of cases these are not severe"—because, no doubt, nearly all the severe cases die in the first stage. "In the cases which are kept alive with difficulty there is a short, quiescent stage followed by intense bronchitis. The frothing gives place to greenish mucopurulent expectoration, consciousness to delirium, the temperature rises from subnormal up to 104° F., the pulse becomes of small volume, with its rate increased perhaps to 160, the respirations are less choking but more shallow, and number up to 70 per minute before death."

As to treatment in severe cases of chlorine poisoning, the one object must be that of getting rid of the exudation in the air tubes which is drowning the victim. Artificial respiration and insufflation may, therefore, be useful. Emetics are serviceable, as by the act of vomiting the lungs are freed from the liquid. The administration of oxygen relieves the cyanosis and improves the condition of the patient. Atropine is useless.

The author concludes with the statement that the chlorine poisoning of the lungs is comparable to extensive burns of the skin, and the same general treatment to support

strength and lessen shock is required. Just as septic infection of the skin is the sequel of the burn, so pneumonia and bronchitis follow chlorine poisoning. In their experimental animals severe poisoning had in every case that end, and they know of no means of preventing it. Warmth and good nursing may pull a man through; those conditions are difficult to apply to animals.

DUODENAL ULCER FROM A SURGICAL STANDPOINT.

LAMBERT (*Surgery, Gynecology and Obstetrics,* November, 1915) quotes Wilkie to the effect that the duodenal wall in many instances is supplied by what is truly an end artery, and it can be readily understood that this relative limitation of the blood supply would interfere with the healing of any lesion in this region.

Induration of these ulcers in the majority of cases prevents excision, but even if excised such treatment does not eliminate hyperacidity, and so a gastrojejunostomy must supplement the excision. If the latter is efficient practically no food leaves the stomach, and so pyloric exclusion is unnecessary. In the ordinary case, and especially when undertaken for hemorrhage, the procedure appealing to the author is autolytic excision by means of the pentagonal compression stitch of Draper and Carpenter, combined with a posterior gastrojejunostomy.

The most striking complication of duodenal ulcer is acute perforation, of which 14 cases are reported. Analysis of these cases shows that the most characteristic feature is the onset of sudden overwhelming pain in the upper abdomen. Vomiting is not marked. The temperature and pulse are low at first, but later the pulse tends to rise. The respiratory movements are restrained and the patient looks ill. Rigidity is the most important factor in diagnosis; from the first it is present all over the abdomen, but early more marked on the right than on the left side. The presence of movable dulness and loss of liver dulness are relatively unimportant.

Perforation must be differentiated from (1) acute pancreatitis, in which there is often cyanosis, and in which vomiting is more persistent and abdominal rigidity more marked; (2) appendicitis, in which rigidity is more marked in the right iliac fossa; (3) strangulation of the bowel, which is characterized by persistent vomiting, paroxysmal pain, distention, and absence of rigidity; and (4) ruptured ectopic pregnancy, in which rigidity is absent and in which hemorrhage soon clears up the diagnosis.

The treatment is immediate laparotomy, the operation never being delayed in the hope that the patient will rally from the shock. This should be combated by the immediate administration of a full dose of morphine. In only one of the 14 cases was the ulcer suitable for excision. In the others a deep compression stitch was placed and a posterior gastrojejunostomy by the no-loop method was done, the anastomosis being placed as near the pylorus and greater curvature as possible. The abdominal wound was closed without drainage and no secondary abscesses developed.

DISINFECTION OF SEPTIC JOINTS.

COTTON (*Boston Medical and Surgical Journal,* Dec. 16, 1915) observes that infected joints have always been a reproach to our art; their treatment the counsel of despair.

A suppurating joint, infected from without or from within, has been counted among the lost, and not only joints, but lives—many lives—have been lost as well. Nothing could be worse than the story of joint drainage. To-day the opening and drainage of joints should be listed not as an operation but as a crime. It is our duty to-day either to determine and declare a joint infection hopeless, and then to lay the joint wide open (not drain it), or else to bend all our efforts to an optimistic attempt to save the joint; not only to get it healed, but to preserve its function as well.

He learned purely empirically that gonococcal joints if opened do much better when sewed up tightly than when drained.

Shortly after this he encountered some really septic joints, particularly staphylococcic and some streptococcic, and these he treated in the same way, sewing the capsule tight and gradually evolving an antiseptic technique. This consists in opening of the joint and irrigation for fifteen minutes (by the watch) with a full stream of 1:15,000 corrosive sublimate; a flushing-out of the excess with salt solution; then a water-tight closure of the capsule by mattress and single sutures in such a way as to leave the synovial membrane cut edge to cut edge, as accurately as may be.

The external wound is left wide open or nearly so, since real disinfection of the external soft tissues is not practicable. After operation there may or may not be an effusion into the joint; if an effusion comes it goes again within one to three days, and is not accompanied by temperature or by any considerable discomfort.

Traction is usually unnecessary for the separation of joint surfaces. Cotton states that in about two dozen cases thus treated, excluding the gonococcus ones, not less than 15 of them representing infections of staphylococci or streptococci, there were but two failures, one a punctured wound of the knee in a male adult treated according to the above technique and laid wide open, the patella laid back on the thigh. Later (after vaccine treatment) subjected to a cleaning out of granulations of nearly intact cartilage and suture of divided ligaments, he obtained in the end a good leg with 45 to 50 degrees of motion. The second failure was in a boy of three suffering from an epiphyseal staphylococcic infection. The joint was flushed out and sutured. It broke down and ankylosis resulted.

DEEP-SEATED ALVEOLAR INFECTIONS.

RHEIN (*Surgery, Gynecology and Obstetrics,* January, 1916) observes that in studying the dental path as an avenue of general infection it is of the utmost importance to disassociate what is known as pyorrhea alveolaris from either an ordinary alveolar abscess or its more insidious and dangerous type—an infected zone around the end of a root with no pus formation and no sinus, and known as a dental granuloma. The etiology of these two pathogenic conditions is so divergent that they must be considered from entirely different viewpoints. The fact that in both medical and dental gatherings they are discussed so frequently as though they belonged to the same type of infection is due to the lamentable weakness in the medical curriculum on general pathology.

The dental student is wofully ignorant of everything pertaining to the body outside of the dental organs. Nevertheless, he treats pathogenic conditions that have the closest relationship with every important organ. The medical student is taught the anatomy, histology, physiology, and pathology of every part of the body except what may be termed the dental organs. The portal of entry to the digestive tract and the portal of entry for the great mass of pathogenic organisms remain a sealed book to the medical student instead of being viewed as one of the most important studies necessary for a proper understanding of infections. Stomatologists, who with a thorough medical education, however acquired, have made a special study of the dental organs, are the only men whose opinion on these topics should have any recognized value.

In the eyes of the stomatologist the recent work of Bass on this subject is so full of error as to command very little respect. Instead of pyorrhea alveolaris being so common, it is very uncommon and only found after some form of malnutrition has proceeded far enough to destroy the immunity of this end organ tissue.

Many cases of alveolar abscess are erroneously diagnosed as pyorrhea alveolaris. This grave error was much more common before the advent of röentgenology. It has been found that the toxemia resulting from a dental granuloma is far greater than from a pyorrheal discharge. Statistics show that while the death-rate in infancy, adolescence, and early middle life has been steadily de-

creasing, year by year, on the other hand from maturity to old age, until last year, the death-rate from diseases of the heart, blood-vessels, kidneys, etc., has practically doubled in the United States in the past thirty years. Forty years ago the dentists in the United States did very little tampering with the pulp of a tooth. It was the rule to practice extraction as soon as there was pulp involvement.

During this period there was a remarkable advance in what may be termed the technical art of dentistry. Each step in this artistic and mechanical advance brought with it less respect, less fear of consequences of preserving in the jaws teeth in which the pulps were devitalized. The conscientious dentist felt that the acme of professional service had been reached when after the pulp had been removed the tooth remained in the jaw without giving any discomfort. Bacteriology twenty years ago had not revealed to us the presence of streptococcus viridans around the ends of the roots of teeth and the fact that it could be present without causing the slightest irritation.

A strongly circumstantial point of clinical evidence to substantiate the fact of the increase in mortality being due to faulty dentistry is found in the fact that in Great Britain during this period there has been at this advanced age a slight decrease in mortality. This appears to be due to the comparatively small amount of bridge work and the extensive extraction of teeth practiced in the British Isles.

Professor Hartzell has very lucidly described the great abundance of streptococcus viridans around the teeth and the ease with which they can pass through the gingival crevice, and then through well-defined channels reach the alveolar structure. His own research work shows us that these microörganisms appear to be constantly traveling about these regions. They appear to do no harm until they congregate in such quantity as to produce a distinct nidus of infection. The remarkable vitality of the dental pulp is shown in the fact that in about 50 per cent of cases where attempted devitalization takes place, the apical end may retain its vitality. In such cases periapical infection in the shape of a dental granuloma never takes place. Where, however, the pulp-tissue is devitalized entirely, infection at the point of the foraminal opening into the alveolar tissue is the invariable result unless correct therapy is followed out.

Research work on pulpless teeth developed the fact that as long as the openings at the ends of the roots through which the pulp with its circulation gained entrance remained unsealed, infection from streptococcus viridans was not only possible but most probable. Roentgenographs demonstrated the fact that the root-canals could be perfectly cleansed and filled close to the apex of the root and still infection would follow unless the outer end of the root was sealed in such a way that wandering streptococci could find there no resting-place.

It was discovered and proved that if the pulp contents were absolutely removed, and any pathogenic tissue present eradicated, and the canals hermetically sealed in such a manner that the sealing material was forced through the apical orifices, thus obliterating them, no infection would ensue.

Roentgenology has proved the correctness of this therapy in showing alveolar regeneration where this operation has been performed thoroughly with all necessary aseptic precautions. This operation is, however, not an easy one. It consumes a great deal of time and requires infinite skill combined with patience on the part of the operator.

Wherever the roentgenograph does not show the periapical end of the root-canal to be absolutely sealed, the operation must be considered a failure. Wherever this operation cannot be successfully performed the tooth should be immediately extracted, or the unfilled portion of the root be removed by an apicoectomy.

In the city of New York a large number of dentists have adopted this technique, and the statistics of New York State for the past two years begin to show a decreasing mortality in those of advanced life. Amer-

ican dentistry has once more shown its superiority in meeting this problem and being able to save about 90 per cent of pulpless teeth in such a manner that reinfection of this area is unlikely.

TREATMENT OF GUNSHOT WOUNDS OF THE ABDOMEN.

MAYO ROBSON (*British Medical Journal*, Dec. 4, 1915), who served in the Dardanelles from June to the end of October, after "some little experience" of cases treated by opium, starvation, and rest, concluded that something more could be done, since a very large proportion, especially of the shrapnel shell wounds, ended badly. Judgment must be exercised as to the class of cases in which it is wise to operate; for instance, a clean bullet wound through the abdomen, with small wounds of entry and exit, and without evidences of internal hemorrhage or extravasation, may, if favorably situated, be treated expectantly; whereas a bullet wound with large openings of entry and exit, or with absence of liver dulness, should be operated on as soon as possible if seen early and if the general condition is favorable.

As nearly all shrapnel, shell, and bomb wounds are septic and produce great visceral injury, operation will give a better chance of success than expectant treatment if the patient is in a fit condition to bear it and the case is seen early. If the case is seen late and peritonitis has already set in, a small incision above the pubes large enough for the insertion of a drainage-tube down to the bottom of the pelvis, and the Fowler position, will give the patient a chance of recovery.

This treatment, by the way, is the best for typhoid perforation; Robson having learned this in France, where, in the large typhoid hospitals, a good proportion of cases are being saved.

Among the cases he treated was a shell wound of the abdomen tearing the anterior wall of the stomach. The patient recovered. So, too, did a patient with a penetrating wound of the right side of the abdomen with a tear of a large mesenteric vessel, which was ligated; and one with a shrapnel wound low down in the cecal region (the cecum being closed by silk sutures); likewise a patient with a bullet wound through the right side of the abdomen below the costal margin recovered, though liver dulness was absent and there was effusion into the right lung. Wounds of the colon and duodenum were closed by purse-string sutures. Another patient had a bullet wound of the epigastrium with free blood in the abdominal cavity from the mesocolon, stomach, liver, and pancreas. The latter was bleeding freely. The bleeding points were secured, the stomach wounds were sutured. Also a case of bladder wound recovered. A case with a shrapnel wound beneath the left costal margin, attended by free bleeding and wounds of the small intestine, died.

COMPLICATIONS IN CONNECTION WITH THE URETERAL STUMP AFTER NEPHRECTOMY.

Although there are other causes, states VERRIOTIS (*Zeitschr. f. Urologie*, V. 9, No. 7, 1915), that will give rise to fistulæ besides the ureteral stump, when these cases are critically examined, especially those cases in which there is a relationship between the stump and the operated wound, it will be found that the stump is the cause of the fistula. Heitz-Boyer and Morenno have shown by means of Beck's paste that the fistula is in close connection with the stump of the ureter. There is no agreement, however, between the development and the degree of renal tuberculosis and the degree of ureteral tuberculosis. A kidney only slightly involved by tubercular disease may have a ureter with very far advanced tuberculosis, and *vice versa*. Such fistulæ may be divided into two classes: (1) Fistulæ occasioned by the stump, but that are only connected with the wound; (2) fistulæ connected by means of the stump both with the bladder and the wound. In the former the fistula is pustular, in the latter the secretion contains urine and pus.

Fistula may make its appearance either after the nephrectomy or after cicatrization of the wound. In the latter case a swelling, diffusely red, appears in the scar, which after a short time shows vesicular elevations. These break open, and from the openings thus created a yellowish pus exudes. In some cases the pus is more fluid and has an ammoniacal odor. In these cases there is urine admixed with the pus.

In other instances the patient leaves the hospital with a perfectly healed scar, and after a time returns with symptoms of acute phlegmon. On examination a diffuse edematous swelling will be found in the region of the ureter. These cases may have the development of a cold abscess, in which event the symptoms are less pronounced. In other cases the patient complains of severe pain on the operated side. At the time of the pain the temperature rises and the urine, which has been cloudy, may become quite clear. As soon as the pus reappears in the urine the pain disappears. This is a picture of unilateral intermittent pyonephrosis, but this diagnosis should not be considered because the patient has but one kidney and this passes clear urine during the crisis. The symptomatology shows a pustular process in the ureteral stump. It is intermittent pyoureter. It happens in those cases in which the ureter is thick and dilated. The lesions in the ureter may not all be of the same age. In one part of the ureter the lesions may be young, while in another part they may be far more advanced. Usually the upshot of the process is the formation of a cold abscess, provided there is no mixed infection. If the condition follows a more acute course, mixed infection should be suspected, and it should always be borne in mind that these abscesses may evacuate into the visceral organs.

In some cases the wound remains perfectly cicatrized and shows nothing abnormal. But the patient continues to pass pus in his urine, with or without the presence of tubercle bacilli. In other cases pus in the urine appears after a period of apparent improvement. These symptoms need not necessarily excite suspicion of tuberculosis of the remaining kidney, because they may be occasioned by the ureteral stump, which becomes diseased. Where the patient, after the nephrectomy, shows perfectly clear urine and then develops pyuria, it may be assumed that at the time of the nephrectomy the ureteral lesions were still in their earliest stages (initial infiltration, granulations), and that since the operation these lesions had developed, accounting for the appearance of pus in the urine. In such instances cystoscopy is of importance because it will show the source of the pus.

In regard to technique, Verriotis says that it makes little difference whether total or partial ureterectomy is practiced, because in either instance fistulæ occur in 10 per cent of cases. He believes, however, that the complication of fistulæ may be materially restricted if drainage is avoided through the wound—that is, the three following points should be adhered to: (1) lateral subperitoneal extracapsular nephrectomy; (2) suture of the wound; (3) lumbar drainage independent of the wound. —*Urologic and Cutaneous Review*, December, 1915.

EARLY DISINFECTION OF WAR INJURIES.

TUFFIER (*Surgery, Gynecology and Obstetrics*, January, 1916) states that the importance of early disinfection of wounds is not sufficiently realized. Of 1000 amputations 75 per cent were due to the long duration of the treatment of wounds and their late complications, such as neuritis, osteitis, and vicious scars. Disinfection after the first forty-eight hours is practically impossible, but disinfection within the first few hours is very effective.

The number of bacteria in a wound and their diffusion through the tissues are in proportion to the length of time that has passed since the wound was made. As early as the Russo-Turkish war of 1877, Rehyer showed that in injury of a joint there was a mortality of only 13 per cent in the cases treated during the first twelve hours, while

among those treated later the mortality was 61.5 per cent. The same thing was true of compound fractures, the mortality rising after the first twelve hours from 18.1 to 35.3 per cent.

The action of the antiseptics in use at present has been shown to be unsatisfactory. From his recent research work Wright thinks that hypertonic salt solution is the best, because of its osmotic action on certain elements of the serum, but it is powerless against the streptococcus. Tuffier believes that the best antiseptic to use is hypochlorite of soda by Dakin's method.

All wounds should be disinfected at the dressing station or at the stationary ambulances, which are from 5 to 20 kilometers back from the firing line. At the dressing stations the skin is disinfected with ordinary petroleum, the superficial or easily accessible parts of the wound cleansed, and a compress of Dakin's solution applied and bandaged loosely. The wounded limb is immobilized. The line of stationary ambulances should form a barrier beyond which no infected case should be allowed to pass. The wounded should arrive there within twelve hours after being wounded, and the wounds be completely disinfected. It is very dangerous to send an infected case farther, and perfectly safe to send the patient on after immobilization and complete disinfection of the wound.

The technique is as follows: Combat shock, though no really satisfactory means is yet known for doing this. Take a radiogram to show the site of projectiles and the nature of fractures. Give ether anesthesia if there is no contraindication. Cleanse the skin and apply tincture of iodine, protecting the wound. The wound is then irrigated thoroughly with hypochlorite of soda, and the surgeon explores it very carefully with his finger or a probe; all foreign bodies and bone fragments are removed very carefully so as not to injure sound tissue. Any necessary incisions are made with care and only necrotic tissue removed. After the wound has been cleansed in this way several rubber tubes are inserted into its deepest recesses. If it is necessary in order to hold the wound open tampons of cotton wet with Dakin's solution are put in around the tubes. Sterile cotton is put all around the wound and the limb very loosely bandaged, the rubber tubes projecting out through all the dressings. Every hour 5 to 10 Cc. of Dakin's fluid is poured into the tubes. The cotton is changed every day. A clear liquid is discharged from the wound at first, but there is no odor or suppuration. The temperature generally falls to normal within forty-eight hours. Tuffier intends to publish the statistics of his cases treated in this way soon. When the temperature has been normal for a few days and the wound is in perfect condition it is allowed to close up.

THE EXAMINATION, PREPARATION, AND CARE OF SURGICAL PATIENTS.

CHARLES H. MAYO (*The Journal-Lancet,* Jan. 1, 1916) states that the rapid advances made in medicine during the past three decades have necessitated many changes in the methods of general examination of surgical patients, and also in their preparation and after-care. Reviewing this period in the general practice of medicine and surgery, it appears that the methods which have survived are few and simple in principle and application, as compared with the original methods. This includes all antiseptic surgery.

In medical practice there has been almost a revolution in variety and principles since we have come to understand bacteria and the diseases produced by them. We now know that most diseases arise from infection; and the acute condition or the late results of it are being treated. Briefly, the newer medicine is the understanding of the varying stages of the processes of infection, of the increased or lowered body-resistance, as well as searching for the local focus and aiding in its elimination. In this connection, dentistry and diseases of the nose and throat have received much attention in the study of local foci of infections.

In regard to the patient: As a profession we are probably less acute in our general

observation than was the practitioner of the old school. In his day everything depended on observation, and apparently no little thing was overlooked, whereas we are supported by many laboratories of special investigation. While it is possible in the present day to acquire a general survey of the practice of medicine in its various branches, it is wholly impossible for a physician to practice, and to apply unaided, the principles of the various laboratories and recognized specialties. For example, we are as dependent as ever on tests of the urine. Reports of albumin and casts, while intimating diseased kidneys, do not prove them essentially diseased, but lead the physician to search for the irritant in an acute or chronic infection, and to regard the kidney as an overworked eliminating organ; therefore, tests of renal efficiency have been developed.

Blood examinations are not considered as infallible indications of special disease as they formerly were, but the count, character, and color-index of the cells are of great value. Blood smears and cultures are proving necessary to identify obscure infective conditions.

Laboratories for the study of bacteria, the preparation of vaccines and serums, and the examination of intestinal secretions, are also of increasing value. Intestinal parasites and bacteria often are found the cause of obscure general diseases other than the well-known tropical varieties. In the laboratories of research the specific effects of bacteria on animals in a study of the causes of obscure diseases are most important.

Radiography is invaluable in the diagnosis of diseases of the alimentary tract, diseases and fractures of bones, diseases of the lungs, kidneys, ureter, and bladder, and in locating foreign bodies, stones, etc. Radiography has the disadvantage of apparently being always correct in its evidence, and, even when contrary to the clinical findings, it is too often accepted as correct. Seldom, however, should a single, even though important, factor be taken to represent the true condition, but rather a detailed study of the various essential organs of the body should be made. The body has a natural tendency to recover from disease. This is fortunate, since we are constantly overlooking conditions of which timely discovery would save much suffering and possibly life.

The electrocardiograph is of value in designating patients with heart-muscle changes who may die suddenly during the first few weeks following operation, from fibrillation instead of embolism, as is often stated. The blood-pressure is also of value in showing the elasticity of the cardiac muscle and blood-vessels. Too much attention is paid to a high systolic pressure alone; it is the relationship of the systolic and diastolic which gives the clue to the condition. Diastolic pressure above 110, or higher, is of great importance in influencing the judgment of the surgeon. A high blood-count may mean diminution of fluid. This should be corrected if possible. Transfusion of blood before operation is rarely resorted to, but in extreme anemia from recent loss of blood, either directly after operation or in delayed accidental hemorrhages, shock is greatly relieved by the direct transference of blood to the patient. There are many methods of transfusion, the former direct methods giving way to the indirect, which are now simple and safe, and permit the transference of a measured quantity of blood. Hemolysis is a factor to be considered, and, unless the urgency is great, should be tested between the donor and the recipient.

The key-note of progress in the twentieth century is system and organization—in other words, "team-work." This factor has been very noticeable in the medical progress of Germany, where true diagnostic hospitals have been established. Such hospitals conducted by the State through the medical department of its university would be of enormous value to the public and the medical profession in this country. Patients from all over the State could be sent by their home physicians to this hospital for diagnosis in rare, obscure, and complicated diseases. From these institutions patients could be returned to their home physicians for medical or surgical care, with recom-

mendations for such care, or be sent to special sanatoriums, or medical or surgical hospitals, as indicated. If returned to the home physician, included in the report of the case should be sent references to the latest literature on the subject and information of where such could be procured. Unquestionably, the appropriation for such an institution would readily be obtained if the public but understood the value and saving to the State which would come from the prevention and cure of disease. There is no general estimate on the value of human life as compared with the value of animals, consequently these facts are slower in being generally appreciated from a purely monetary standpoint.

The starvation diet in the preparation of surgical patients has long been abandoned, the dangers of acidosis being nearly as great in starvation as in diabetes. The diabetics are accepted as a risk, and, except in emergencies, are always given preliminary treatment for their general condition, endeavoring to maintain the alkalinity at a high standpoint. The condition of children is improved by sugar and other glucose foods.

It should not be forgotten that treatment aids many patients more effectively before operation than after. Those who are suffering from starvation, loss of blood due to acute or delayed obstruction of the alimentary tract, should have a two-stage operation when possible. For example, in a case of pyloric tumor with obstruction, the body fluids should first be restored by enemas, liquid nourishment, and subcutaneous injection. Gastroenterostomy is then done, and, after two or three weeks, when the patient is greatly improved, a pylorectomy is made, both operations being accomplished with greatly lowered risk to life.

Physics are less freely used than formerly. Because of their great depletion of the body fluids and the fact that they disturb rest, laxatives should be given two or three days preceding the operation, instead of the night before.

There probably has been no more noticeable change in the preparation of patients for operation than that of preparing the skin. The old methods of applying soap poultices for several days so lowered the resistance of the skin to germ life that the area of operation was often a mass of pustules, a condition seldom seen in emergency operations. The present-day method of iodine application and similar rapidly acting agents has almost eliminated such infections. With these superficial cleansing methods, however, much care is used to protect and cover the skin about the incision during operation.

More attention is now given to relieve the suffering of surgical patients, at least during the first and second days after operation, by opiates and sedatives. These are not carried to the extent of obscuring the pain as a symptom of serious complication. Senn is quoted as having said that "when the last suture is tied in abdominal surgery the fate of the patient is sealed," a saying which is not true to-day, for many patients are saved by reopening the abdomen for late hemorrhage or for obstructive conditions of the alimentary tract. Enterostomy made at the end of the third day from the commencement of obstruction has saved many lives; if done later the results are not so successful. Patients in poor nutritional condition may be tided over temporary periods of gastric paralysis by jejunostomy. Dilatation of the stomach following abdominal operations is more common than was formerly supposed; however, if discovered early, it may not be serious. If patients are not doing well, even if they do not complain of the stomach, a tube should be passed. Should there be dilatation, caused by paresis, the stomach should be emptied every six or eight hours until relief is obtained. If intestinal obstruction occurs it may be relieved by enterostomy as late as the night of the third day or the morning of the fourth.

Primary infection now rarely occurs in clean cases. A dry wound with a light dressing held by adhesive strips is the rule. Delayed infection, formerly attributed to catgut, we now know to be frequently caused by a dead space in which a blood-clot has become infected by bacteria carried

through the vascular system from some local focus. These, however, should be classed among the preventable troubles. Large amounts of antiseptic catgut, used as sutures and ligatures in a limited space, become a menace from the chemical irritation, and the consequent excessive secretion, of the wound, such excessive secretion being nature's method of washing out the antiseptic preparation before the phagocytic activity of the leucocytes has developed.

Induration of the wound should be looked for in patients with slowly rising temperature after five days, and, if found or suspected, should be opened by puncture.

Much benefit comes from the intelligent use of bacterial serums and vaccines in chronic diseases. If not effective, they are not so much to be discredited as is their preparation, selection, or employment.

When patients are compelled to remain in bed for a long time they should be turned and moved as much as possible. They should also be urged to keep their limbs moving as much as their position and condition permit, which aids markedly in inhibiting muscular weakness occasioned by prolonged rest.

Getting patients out of bed as soon as possible after operation conserves strength, improves the mental attitude, prevents the lowering of blood-pressure and the change in the heart-muscles, and, apparently, has reduced the percentage of sudden deaths from embolism. The sooner patients can be removed from the depressing influence of general hospital life the more rapid their convalescence.

INTRASPINOUS TREATMENT OF TETANUS WITH LARGE DOSES OF ANTITOXIN.

WALTHER (*Surgery, Gynecology and Obstetrics,* January, 1916) presented a report of the work of Pignol, Brisset, and Lémonnier in the treatment of tetanus. There has been a tendency recently to give very large doses of antitoxin, no matter how administered. Castaigne has given as much as 760 Cc. in twelve hours. The above authorities have had much better and prompter results by giving the antitoxin intraspinously. They have brought about recovery with less than 200 gm. of serum. After giving the injection they place the patient's body in a slanting position with the head down. Another part of their treatment is efficient care of the wound, free incision, removal of projectiles, and exposing as large a surface of the wound as possible to the air, in addition to the use of suitable antiseptics. The objection has been urged to their results that they took only favorable cases, those with a long incubation period, but they say they took the cases without selection, and that, moreover, a parallel series of cases not given their treatment all died, though some of them had long incubation periods.

Among 36 cases 3 died of complications, septicemia, pulmonary gangrene, and pneumonia. Of the remaining 33, 6 died, or 18 per cent. Three of these cases were extremely acute forms of respiratory tetanus with paralysis of the diaphragm and the respiratory muscles. Leaving these out of account gives three deaths in 30, or 10 per cent. The treatment should be used more extensively and further statistics collected.

THE RADICAL TREATMENT OF PERITONSILLAR ABSCESS.

BARNES (*Boston Medical and Surgical Journal,* December, 1915) holds that quinsy may be considered a submucous abscess of the tonsillar sinus, the pus being confined between the tonsillar capsule and the muscular walls of the fauces immediately subjacent to it—the superior constrictor of the pharynx externally, and the palatoglossus and palatopharyngeus anteriorly and posteriorly respectively. The pus may dissect the capsule away from the muscles over a large portion of the sinus. Anterior and posterior abscesses are usually easily accessible by incision through the anterior pillar or between the posterior pillar and the tonsil. When the pus is confined to the space between the body of the tonsil and the superior constrictor muscle, the task of reaching it by incision is not always an easy one. Ballanger has proposed a capsular

dissection of the tonsil backward until the abscess cavity is reached. Provided ankylosis of the jaw be not fixed (and it usually is in quinsy), this method is readily carried out and is practically sure of success. A further step lies in complete dissection of the tonsil suggested by Coolidge. He has operated on ten cases by this method and regards it as much safer than the simple incision, unless the abscess be so large that the quantity of pus evacuated constitutes in itself a source of danger. The only fresh wounds are those made through the plica anteriorly and posteriorly. After dissection, instead of a closed abscess sac and a poorly drained fresh incision, there remains a simple open ulcer, the walls of which are everywhere rendered practically impervious to absorption, and it will be appreciated that this radical treatment is far less dangerous from the standpoint of streptococcus infection than the older method of simple incision.

Quinsy is said not to become suppurative until the fourth or fifth day of the disease, but dissection of the tonsil will convince any one that there is pus on the second or third day, and it is too deeply situated to be reached by an ordinary cut. It is desirable not to perform the operation before the third day, as before that time the walls of the sinus are not sufficiently infiltrated to offer a suitable defence against streptococcic infection.

The operation of tonsillectomy in these cases differs only slightly from the usual procedure by the dissection method. It is essential that the dissection be a clean one, and that the muscular walls of the sinus be as little injured as possible. If one of the larger veins is opened, the chances of general streptococcus infection are distinctly increased. To avoid this, it is necessary that the field of dissection should be seen at every step. Now these tonsils are always tightly adherent to the sinus walls, except over the area occupied by the abscess itself. It is difficult, therefore, to find the line of demarcation between the two after the first incision in the plica has been made. The usual more or less blind evulsion of the superior lobe by blunt instruments or by probe-pointed knives is dangerous, as the sinus walls are almost sure to be injured. To insure against this, Barnes has found a pillar retractor essential. The one he used is not unlike Killian's retractor for the lacrimal sac, except that the handle is longer, the blade broader and thinner, and the curve somewhat greater. After the first incision in the plica has been made, the retractor is inserted by an assistant under the free edge, and the plica and pillar gently pulled outward and forward. At the same time the tenaculum holding the tonsil is pulled inward, so that the line of demarcation between the capsule and the sinus wall is easily discerned at the apex of the resultant V-shaped cleft between the two tissues. The lightest touch of a sharp knife serves to deepen and widen this cleft, which is in this manner extended backward until the abscess cavity is reached. A gauze sponge on a holder is then inserted against the incision and the abscess cavity allowed gradually to empty itself. If there is a large amount of pus, several sponges may be required to absorb it. This, however, causes no embarrassment, as the stream may be cut off or turned on at will by the valve-like action of the plica and anterior pillar controlled by the retractor. When the pus has been completely evacuated, the dissection is again carried on as before until the tonsil is sufficiently freed to allow of the easy application of the snare.

The bleeding during this operation is surprisingly slight, no greater, indeed, than that which occurs in the usual operation on the non-adherent tonsil.

The question of the disposition of the other tonsil is a delicate one. Barnes has always removed it; and though cogent reasons undoubtedly might be advanced against it, he has yet to see any untoward results that would lead him to change his belief in its safety.

The results of the operation are particularly gratifying, especially to the patient. All the local symptoms subside with surprising rapidity, so that on the day following operation the sore throat of tonsillectomy

alone remains. Strangely enough, this last symptom is always quite mild on the side of the abscess, and patients invariably remark upon the fact. The lessened sensibility of the wound is probably due to the infiltrated condition of the tissues.

FOOT-STRAIN AND OTHER COMMON FOOT DEFECTS.

MARSHALL (*Boston Medical and Surgical Journal,* December, 1915) roughly groups these cases as follows: Simple relaxation and strain; rigid flatfoot and allied conditions; foot-strain accompanying other distinct pathologic states; miscellaneous lesions confused or associated with foot-strain.

There are deformities without symptoms and symptoms without deformities.

Treatments must be something more than merely local mechanical ones. General conditions have to be thought of in every instance because a large proportion of all cases of simple strain give histories of overwork, debility, "autointoxication," or other vague run-down states which should have medical care to insure quickest recovery.

Physicians themselves too frequently treat foot-strains as mechanical weaknesses, to be supported simply with mechanical props, or they tinker surgically with feet to improve only local structural peculiarities. Such mechanical or surgical methods are necessary for success very often, yet the fact remains that failures which still occur after them originate in neglect of internal medical treatment. The latter corrects complex physiologic peculiarities which all patients possess in addition to their anatomic ones.

The underlying vascular peculiarities of rigid flatfoot are little known. There may be some additional substance, or group of substances, or some unusual proportion of an ordinary constituent, in circulation in rigid flatfoot which produces irritations of synovial membranes and increased stiffness in the muscles. There are no methods of telling surely whether muscle spasm in such instances is a simple reflex phenomenon, or is due directly to influences of circulating substances upon muscles, or whether there are combinations of these two theoretical possibilities. We do know, however, that circulating bacteria, lodging and developing within joints, will set up inflammatory changes and that the latter may produce joint adhesions. It is a well-known fact also that there is often increased reflex spasm in muscles controlling inflamed joints. It seems not improbable, therefore, that sometimes a group of bacteria, or their toxins, may be causative agents in rigid foot conditions. Different grades of virulence in bacteria and in bacterial products are recognized, and make it easy to account theoretically for all the many varying degrees of stiffness which are found clinically in feet, as the latter are affected by these variable irritants. At times there appear to be selective actions in these unrecognized substances, or special lowered resistances in certain groups of muscles and ligaments, that result in some parts becoming more affected than others. This is the case in spasm of peroneal muscles, also in osteal changes at insertions of Achilles tendons and plantar fasciæ, where calcifications and spur formations frequently occur. Discussions of selective actions of circulating substances and resistances of particular tissues, however, cannot be entered upon.

We know only that some feet gradually become painful and stiff instead of becoming painful and pathologically relaxed, also that rigid types often run longer courses than mild simple relaxations. Benefits are derived in rigid states from protective strappings and supports as in relaxed ones, but in addition there often are needed in rigid types other manipulations to break adhesions and to restore normal positions. Plaster casts are required, too, for complete rest and to preserve corrected positions. Local spasms of peroneal muscles have been treated by divisions of peroneal tendons to prevent increasing deformity, but underlying causes are not influenced by this method.

Errors commonly observed are those of patients or physicians who conclude, for example, that flexible shoes are harmful

because some persons are made worse after their use while other patients are benefited by use of foot supports; or oppositely, that plates are bad because they do not relieve some individuals who are helped by exercises. Mistakes in these instances consist in comparing things which are unlike each other, and instead of successes of one method logically should be compared with successes of the other, also failures with other failures. In addition, it is unjustifiable to compare supports with exercises because they are physiological opposites. They complement, not duplicate, each other's action in treatment. They are not antagonistic to each other, as some imagine, because different; and both are needed very frequently before normal functions are completely restored.

Another common error is to place so much emphasis on certain features, broad-toed shoes and low heels, for illustration, that other facts are obscured which should enter into consideration. There can be no doubt that broad toes and low heels are ideal styles for persons who have never worn shoes; but in fairness it must be admitted that the majority of women still wear moderately high heels and shoes without extreme toes. They do this with less discomfort perhaps than the smaller group of women who are obliged from foot-strain to wear more correct styles. Considerable maltreatment is compatible with continuance of normal foot functions in the large majority of persons because compensating functional changes occur which offset slightly unfavorable conditions imposed by faulty foot-wear. Eventually such defective conditions slowly become more comfortable and normal than original ones, when bones, muscles, and ligaments have accommodated themselves long enough. Efficiencies of the feet are lowered somewhat by these changes, yet they are good enough still for all practical uses; so that we should hesitate about making too radical changes in long accustomed styles of foot-wear of persons of middle age and past, when their foot symptoms are not very severe nor of long duration.

Misconceptions of the relative importance of anatomic and physiologic foot peculiarities perhaps are the commonest and most important errors encountered. Anatomic peculiarities can be recognized at a glance, or, if hidden, they are convincingly revealed in *x*-rays. Physiologic peculiarities on the other hand cannot be estimated readily, namely, the healthy vitalities of synovial and subcutaneous tissues, cartilage, bone, and fasciæ, as these various tissues resist mechanical frictions, strains, heat, cold, and traumatic influences to which they are subjected. Physiologic peculiarities, strength of muscle, tissue resistance, etc., are all dependent closely upon variable conditions of blood and lymph, but variations from time to time in vascular proportions unfortunately are almost entirely unknown.

In practice naturally, therefore, intangible unknown physiologic peculiarities are easily forgotten or disregarded, and attention instead soon is directed entirely to easily understood structural variations. This error is of fundamental importance, having direct bearing on surgical procedures, internal medical treatments, and orthopedic appliances. It creates strong tendencies toward unnecessary fitting of mechanical braces, toward too much surgery, and toward overestimation of the importance of anatomical features with corresponding underestimations of functional aspects of each problem.

Abnormal symptoms are most reliable criteria by which to judge the lack of balance between physiologic and anatomic peculiarities. Feet should not be treated because they are flat simply, as some of our best athletes have symptomless flatfoot; nor is it necessary to operate upon symptomless hallux valgus deformities or os calcis spurs because of anatomic considerations alone. Great severity or long duration of pathological symptoms occasionally present indications for immediate interference when structural defects are almost negligible, excessive use under average anatomical conditions being the principal causes in some of these instances.

Another error seen in practice is the

furnishing of too much artificial support for weak feet, or giving right amounts of support for an unnecessarily long time, thereby weakening muscles and ligaments from disuse.

Patients are fitted frequently with footplates, but have no directions given them about discontinuing supports when symptoms have been relieved. Feelings of weakness noticed when plates are first removed, after having been worn for considerable periods, make such patients inclined to continue the use of plates to the detriment of the strength of their feet. This should be avoided by explanations made at the outset.

Barnes draws the following conclusions:

Avoid the routine use of any single special method.

As a starting-point, observe the kind of shoes worn; pathological signs and symptoms in the feet; the amount of use of the feet demanded; the state of health and its recent changes; the past history and treatments; and then, proceed gradually to make necessary alterations and prescriptions in careful manner.

Remember that treatments have to be ended skilfully as well as begun properly, and accordingly discontinue the use of plates, straps, medicines, etc., at best times.

In simple relaxations and strains, or in rigid foot, support the feet with adhesive straps at the outset and simultaneously prescribe suitable tonic-eliminative drugs. Later, from responses to those two measures, and after taking into consideration all circumstances and social conditions of patients, continue with strappings, make changes in shoes, fit plates, prescribe special foot exercises, or suggest other manipulations, plaster casts, etc., as seems best according to physiological requirements of each successive situation.

Do not exaggerate the importance of easily recognized anatomic defects nor underestimate equal values of obscure physiologic peculiarities. Remember that all patients have vascular systems; that possibilities of blood variations have to be dealt with in all cases, and many times are only ways of attacking physiologic defects; furthermore, that regulations of vascular defects sometimes are simple, although defects themselves are complicated or unknown.

Avoid unnecessary surgery, and too much treatment with orthopedic appliances, by taking into account first always the severity and duration of abnormal symptoms; and by remembering that pronounced anatomic peculiarities often are compatible with continued normal physiologic activities.

Treat special foot diseases in appropriate special ways.

Whenever there are recurrences in underlying causes of foot-strains, or other defects, as quite commonly happen at irregular intervals, there are likely to be recurrences also of pathological foot symptoms. These must be expected in some instances, and decisions made then between repetitions of former successful methods and trials of novelties of uncertain merit. Much can be said in favor of adhering to well-tested efficient methods in preference to experimenting too quickly with doubtful new variations. Patients ought to understand the situation.

Explain to patients the limitations and possibilities of comprehensive methods and of single special ones sufficiently for them to understand the necessity of the former for best results, although they may be complicated and include a number of different stages. Demonstrate the inadequacy of any single method of treatment, old or new, in fulfilling the various requirements likely to be met, and which shift from time to time in the same person. Make it clear that these common and comparatively trivial foot troubles require nearly as comprehensive understanding for their skilful treatment as serious orthopedic conditions in other parts.

CEREBROSPINAL MENINGITIS.

This inflammation, which OSLER (*Practitioner*, January, 1916) characterizes as a form of meningitis, is not only interesting as an epidemic, but as having the fortunate distinction of being the only variety from which recovery takes place in from 50 to 70

per cent of the cases, having been widespread and permanent in England, particularly among the overcrowded, actively worked young soldiers, and subject to a special study. Whilst recovery in the tuberculous, pneumococcic, or streptococcic varieties of meningitis is a rarity, the meningococcus, of which there are numerous strains, has a distinctly lessened death-rate. Concerning prophylaxis of this affection, it must be remembered that the germ is ubiquitous and is harbored by many who show no symptoms of the disease, but producing in others a mild catarrh, the meninges being reached in but a few. The concentration of human beings, particularly young recruits in camp, should be regulated, as should all causes for exhaustion, chill, and the excessive use of tobacco, which favors pharyngeal catarrh.

According to Osler the prophylactic use of antimeningitic serum is still on trial. With our present knowledge, specific therapy combined with lumbar puncture is the rational treatment, combating the sepsis by means of the one, and the pressure effects of the local exudate by the other. The long studies of Flexner and his pupils and others have made possible the production of a serum which has a specific influence on the meningococci in the spinal canal. Sophian's tabulation shows an overwhelmingly strong case for the specific therapy.

Osler reports an outbreak among Canadian soldiers at Salisbury, where 40 cases were treated, with 26 deaths—a mortality of 63 per cent. There was no benefit from the sera, obtained from several different sources. In one case the meningococcus was isolated 2½ months after the illness and after more than 20 intraspinal injections had been given. In another case the meningococci were found in the fluid five weeks after the onset of the illness, during which there were 12 injections. At Haslar there were no better results. The serum was abandoned after eight deaths in twelve cases. The reason for the wide-spread failure is probably incident to inert sera. It is not known in how many cases the parameningococcus was present. Moreover, there has been insufficient dosage, failure to treat cases early, and imperfect technique. There are, moreover, cases which resist all treatment.

Robb (in the same journal) notes that before the injection of the serum of Flexner he had under his care 275 cases, and the death-rate was 72 per cent. He then received from Dr. Flexner a supply of the serum. He began its use in September. 1907, with results which were truly dramatic. The death-rate fell at once to one-third what it had been—in other words from 80 to 26 per cent. The mortality of the cases not sent to the hospital in the same epidemic was 85 per cent. In no series of cases in subsequent epidemics was the mortality in excess of 30 per cent. It is absolutely impossible to give a reliable prognosis. Even the worst cases may recover. The results during 1914 were not so good—36 per cent. The opinion is expressed that much of the serum which was sent to England last winter was of much lower standard value than that supplied formerly. On this basis is accounted the less satisfactory results.

With this in mind Robb took some serum from Flexner's laboratory, with which he has treated eight cases, with only one death. His latest case, a soldier, admitted when twenty-four hours ill, was deeply unconscious, with normal temperature, cyanosis, stertorous breathing, and the dreaded slow pulse. On puncture, thick, syrupy pus was obtained. He was given 40 Cc. of serum; next day he could be roused, but had paralysis of one side of the face, and on the following day paralysis of the arm on the same side. He then steadily improved, and the paralysis completely cleared up. He received five injections totaling 140 Cc. of serum. Robb advises that the injections be made under a general anesthetic, preferably chloroform, unless this be obviously for some definite reason contraindicated. Withdrawal of the fluid often gives rise to severe pain. The injection may give rise to almost unbearable anguish. A full dose of 20 Cc. should always be given, except in young children, when it should be from 3 to 12 Cc.

Rolleston notes that from the commencement of the war to July 31, 1915, there were 170 cases of cerebrospinal meningitis in the Royal Navy. There is a noticeable failure in the therapeutic effect of the intrathecal injection of antimeningococcal serum. The cases treated solely by the intrathecal injection of serum and lumbar puncture showed a higher death-rate than that of the whole 163 cases. The injection should be made at the earliest possible time, this markedly influencing the mortality. When given later than the seventh day a very small percentage gets well. Alarming symptoms directly after the intrathecal injection occurred in two cases only. Serum rashes were noted in 20 per cent of cases. No severe anaphylactic symptoms were observed. Lumbar puncture was performed in 149 of the 163 cases. It is advised that the men who recover be invalided, since they are likely to be intermittent or periodic carriers who alternately give negative and positive results from the examination of throat swabs for meningococci.

Foster records on limited experience failure with the serum and expresses his belief in the helpfulness of lumbar puncture.

Sutherland lays down as predisposing causes to the malady overcrowding, overfatigue, nasopharyngeal catarrh, and inadequate ventilation.

AN IMPROVED SUBSTITUTE FOR IODIZED CATGUT SUTURES.

Watson (*Surgery, Gynecology and Obstetrics,* January, 1916) has shown as the result of tests that, under the conditions of the test, a one-to-one-thousand solution of potassium mercuric iodide will kill bacillus coli communis in ten minutes, staphylococcus pyogenes aureus in six hours, and even the sporulating bacillus subtilis in twenty-four hours. It will be seen that this strength of potassium mercuric iodide is superior in its germicidal action to a one-to-one-hundred solution of iodine. When it is borne in mind that the catgut used in the test had been soaked in vigorous cultures of the three organisms before immersing in the disinfecting solutions, it is evident that a one-tenth of one-per-cent solution of potassium mercuric iodide would effectually sterilize sutures which had been contaminated in such handling as that received in the operating-room. Since, in such a dilution, it is entirely free from any irritant or toxic action it would seem that this salt is to be greatly preferred to iodine.

Having determined its bactericidal efficiency, tests were made on the influence of potassium mercuric iodide solutions on the tensile strength of various sutures. Samples of catgut sutures of various sizes were carried through the process used in the preparation of iodized catgut, substituting a one-per-thousand alcoholic solution of potassium mercuric iodide for the iodine solution ordinarily employed. Comparative physical tests were then made on the sutures thus prepared, on sutures iodized in the usual way, and on ordinary catgut.

The results of this series of tests are striking. The figures for iodized catgut bear out the statement made above concerning the detrimental action of iodine on suture material. On the other hand, the substitution of potassium mercuric iodide for iodine not only obviates this disadvantage but actually increases the tensile strength of the catgut strands, so that sutures so treated withstand an appreciably greater strain than do the plain grades.

A decided objection to the iodization of catgut is the effect produced on such gut by boiling the tubes for the purpose of sterilizing them preparatory to an operation. The gut shrinks and shrivels and is rendered unfit for use when subjected to the temperature of boiling water. This necessitates a recourse to chemical sterilization, which is less convenient. It was hoped that sutures impregnated with potassium mercuric iodide would not be affected when subjected to boiling in sealed tubes. Tests were made by tubing sutures so impregnated in chloroform and then placing the sealed tubes in boiling water for five minutes. It was found that, while the iodized gut shriveled, the potassium mercuric iodide gut remained unaffected.

Potassium mercuric iodide, in alcoholic solution in a dilution of one to one thousand, has more than ten times the germicidal efficiency of one-to-one-hundred solution of iodine in alcohol.

The impregnation of catgut sutures with potassium mercuric iodide, by increasing the tensile strength of the gut, offers a distinct advantage over the similar use of iodine.

MALIGNANT TUMOR OF THE KIDNEY.

WILLAN (*British Medical Journal*, Nov. 27, 1915) sums up his paper on this subject as follows: Excluding children, 63.2 per cent of the cases occurred between the ages of forty-five and sixty-five.

The commonest onset symptom was painless hematuria.

In 32 cases out of 52, pain, hematuria, and a palpable renal tumor were associated at some stage during the illness.

In three cases a varicocele was a complication—that is, the condition was inoperable when first seen.

Two patients had clot retention of urine.

GLANDULAR TUBERCULOSIS.

TICE (*Chicago Medical Recorder*, December, 1915) quotes Parks's research to the effect that the bovine type of infection predominates in infancy and exhibits a predilection for the cervical glands, next in order the abdominal glands; then generalized tuberculosis, including meningitis.

A clinical diagnosis of a glandular tuberculosis may be relatively easy and definite when the external groups are involved, such as the cervical, axillary, or inguinal. The task, however, is far from easy and the diagnosis only "tentative" if the internal groups are in question, as the tracheobronchial and mediastinal or the mesenteric. If the diagnosis depends on the demonstration of the tubercle bacillus, either microscopically or by inoculation, the difficulty is greatly increased and often amounts to an impossibility, associated with the probable location or focus of infection.

Of the many and various symptoms and physical signs which have been described in the clinical recognition of a tuberculosis of the tracheobronchial and mediastinal glands, none are more than suggestive. The same may be said of the diagnostic use of tuberculin.

The best that can be said for the diagnostic use of tuberculin is that a positive reaction indicates a tuberculosis, but it furnishes no information whatever as to the location of the infection or as to its activity. Consequently, it can be only of limited service. Of far greater assistance is the use of the fluoroscope and skiagraph. In many instances the probable diagnosis of tracheo-bronchial-mediastinal gland involvement is only to be made by such means.

In the treatment of glandular tuberculosis much has been accomplished as a result of the active, systematic efforts against tuberculosis in general. The work done by the various milk commissions in providing a certified milk, free from danger of tuberculous infection, must have had a far-reaching influence. The present wholesale removal or enucleation of the tonsils, while condemned by many, is certainly commendable from the standpoint of the prevention and treatment of glandular tuberculosis. To this, perhaps, is to be ascribed the marked decrease in the necessity of surgical interference for tuberculous cervical adenitis. Formerly it was the custom to remove these glands, and too often further infection promptly occurred, requiring operation after operation, but to-day such operations are relatively infrequent. Aside from the usual hygienic, dietetic treatment, considerable benefit is to be had from the judicious use of tuberculin.

In conclusion it is necessary to direct attention to the relation of glandular tuberculosis to immunity. In infants and children, a tuberculous infection is quite the rule, as already indicated. Depending on the amount and virulency of the infection, there is produced a hypersensitiveness resulting either in an immunity and a protection from tuberculosis, or the opposite condition of anaphylaxis, which leads to further progress of the disease and a fatal termina-

tion. From this view the mild, unavoidable glandular infections are not harmful and dangerous, but are really "beneficent vaccinations."

TREATMENT OF SEPTIC WOUNDS WITH EQUAL PARTS OF ICHTHYOL AND GLYCERIN.

DUGGAN (*Practitioner*, January, 1916) for a beginning selected nine of the worst septic cases from about 800 patients. In two the patients' limbs were saved from amputation, two huge wounds being healed over in five weeks without skin-grafting. All the cases did exceedingly well. The advantages claimed are: There is practically no irritation of the wound; the dressing does not adhere to the surface of the wound, and need only be changed once in twenty-four hours—in very extensive septic wounds, not more than twice in twenty-four hours; there is a great saving in cotton-wool, lint, and bandages; the strain in nursing is lessened; the patient is no longer disturbed by frequent dressing, and the time in hospital is very considerably curtailed, as compared with other methods.

The effect of ichthyol on a wound with thickened, unhealthy edges has to be seen to be appreciated; the edges appear simply to melt away.

Patients all volunteered the statement that the treatment suited their wounds better than anything which had previously been applied either at the front or in England. The ordinary methods used in surgery must be applied; necrosed bone, bullets, pieces of clothing, etc., should be removed, abscess cavities opened to their full extent, and counter-openings made where sinuses are present, when this is practicable. The method of application to the wound is by means of a camel's-hair brush. Or the application may be made upon lint or gauze. The surface of the wound is not washed with lint on changing, but is dried with a small swab of cotton-wool or occasionally dabbed with pure alcohol. All ordinary antiseptics are discarded. Adherent dressings are loosened by pure boiled water. Drainage tubes are always removed after the first dressing, as they are regarded as unnecessary and as the cause of much suffering.

REVIEWS.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by L. F. Appleman, M.D. Volume One, March, 1916.

The March issue of *Progressive Medicine* contains, as in previous years, an article upon Surgery of the Head and Neck, by Charles H. Frazier, M.D., of the University of Pennsylvania; one upon Surgery of the Thorax, Excluding Diseases of the Breast, by Dr. George P. Müller, of the Philadelphia Polyclinic; another upon Infectious Diseases, Including Rheumatism, Pneumonia, and Influenza, by Dr. John Ruhräh, of the College of Physicians and Surgeons of Baltimore; another upon Diseases of Children, by Floyd M. Crandall, M.D., Consulting Physician to the Infants' and Children's Hospital of New York; another still upon Rhinology and Laryngology, by Dr. George B. Wood, Laryngologist to the Orthopedic Hospital, Philadelphia; and, lastly, a chapter upon Otological Literature for the past twelve months, by Dr. Truman L. Saunders, Chief of Clinic, Vanderbilt Clinic, and Instructor in Otology in the College of Physicians and Surgeons, New York.

These articles are designed by their authors to represent the gist of contributions to their various subjects during the past twelve months, and each has endeavored to write an interesting story of the progress made.

A HANDBOOK OF MASSAGE. For Beginners. By L. L. Despard. The Oxford University Press, New York, 1916. Price $2.00.

Some years ago we reviewed in terms of praise a much larger and copiously illustrated volume entitled "A Text-book of

Massage" by the same author. The present volume seems to have had its origin in the fact that, with the development of the great war, many people are learning to massage in order to help wounded soldiers, and these need a small, condensed volume for this purpose. We do not see that in the process of condensation the author has been able to save much space. If we were recommending a book to be read by a "rubber," we still would advise the larger volume, if cost was not a factor. When cost is a factor the present volume can be cordially commended.

There are fifteen chapters, the first of which deals with the Influence of Massage, the second with the Description of Massage Movements, and the third chapter with Active and Passive Movements. Massage of individual portions of the body is then taken up, and, after this, massage for various injuries to ligaments and bones is considered. The succeeding chapters deal with remedial measures in deformities, paralysis, and diseases of the circulatory system, and constitutional disease. There is also a chapter upon Lubricants, Fomentations, and Bandages. The last chapter, which covers about thirty-eight pages, deals with Medical Electricity.

As there are nearly one hundred illustrations, and as the text is clear and lucid, it will doubtless prove popular, not only in England but in this country as well.

DIET FOR CHILDREN. By Louise E. Hogan. The Bobbs-Merrill Company, Indianapolis, 1916.

The authoress of this book has already published a number of essays upon kindred topics. Her design in this instance is to provide mothers and nurses with an inexpensive text-book which will show them the working out of the principles which are essential in child feeding. There are a number of chapters which are interesting and to the point, as recipes for broths and soups, as well as desserts.

The opening chapter deals with the question as to what mothers, teachers, physicians, and nurses must understand for the proper feeding of children, with the description of various classes of nursery foods and the foods which children should not receive.

The book does not seem to be in any sense an original contribution, but a compilation of views obtained from standard medical and other works.

DIAGNOSTIC METHODS. A Guide for History Taking, etc. By Herbert Thomas Brooks, A.B., M.D. Third Edition, Revised. C. V. Mosby Company, St. Louis, 1916. Price $1.00.

This is a small volume of less than one hundred pages, differing from the second edition in that a new chapter on the Technique of Staining and Examination of Smears, and the most Important Exudates, has been added. Originally intended for medical students, hospital internes, and physicians who have a limited amount of time to give to laboratory work, it has well met the object of its author. Definite, direct instructions are given as to the procedure which shall be followed. After instructions are given as to how the history should be taken, the various laboratory tests and office tests are described briefly, but so much to the point that one can lay the book upon the desk and follow it, line by line, in making his tests. We expect to refer to it frequently.

CANDY MEDICATION. By Bernard Fantus, M.D C. V. Mosby Company, St. Louis, 1915. Price $1.00.

The author tells in his preface that candy medication has given such delightful results in practice among children that he believes it should be more widely known and resorted to. For a long time it has been recognized that Dr. Fantus had made this subject his "hobby," and he has now prepared a little book in which sweet tablets containing drugs, more or less active, are described with the methods by which they may be made. Altogether he gives us fifty-eight of such formulæ, and then other formulæ which are designed for the making of stock preparations.

A HANDBOOK OF INFANT FEEDING. By Lawrence T. Royster, M.D. Illustrated. C. V. Mosby Company, St. Louis, 1916. Price $1.25.

The idea of this little book was suggested to the author as a result of consultation in feeding cases with many general practitioners. He states that there is little in it that cannot be found in most standard works, but that his object has been to put

the necessary information for the busy practitioner in small space so that it can be readily obtained.

There are fifteen chapters, with an appendix, which deal with the feeding of the healthy infant and the infant who is ill. There are also sufficient number of pages devoted to description of variations from the normal in the processes of digestion in infancy to indicate when modifications of the diet should be made. In other words, Dr. Royster has prepared an interesting and useful little manual which busy men will be glad to have.

CORRESPONDENCE.

LONDON LETTER.

BY J. CHARLTON BRISCOE, M.D.

This month I am afraid there is not very much news of a medical character to detail. The calling up of the men of military age is continued. There is a popular idea that too many are being put back or entirely exempted by the Tribunals. Each of the Tribunals has one working man on the committee, and I am told that the working man is far stricter against granting exemptions than the other members of the Tribunal. The arrangements for the supplying of medical men for the future are being carried out, and at present there is apparently no dearth of medical men, and none have had to be called out at present under the scheme detailed last month. In connection with this scheme it has not been clearly stated whether medical men under the age of forty are liable to compulsory service, or exempted on account of their profession, and therefore only liable to be called up on the recommendation of the War Emergency Committee after signing a form offering to accept a commission. There ought, however, to be no mistake on this point of the medical men of military age being liable to compulsion, and the Central Medical War Committee is only allowed to say that any individual is indispensable either to his hospital or to the locality in which he practices. Steps are being taken to make this point clear to those whom it may concern.

The medical cases admitted from the front to the hospitals are very similar to those mentioned before. A few paratyphoids of a mild type, which have escaped the net in Flanders, some pulmonary conditions—*i.e.*, bronchitis and asthma—a few frost-bites, and a number of cases of rheumatism. Here and there a case of gout is found, which has been sent over in the rheumatism category. All these conditions are comparatively mild. The paratyphoids are rather a nuisance to themselves because the condition is so very mild, and yet they have to be isolated until proved to be clear of the disease. The routine method is to examine three specimens of feces and the urine. The patients are not given a clean bill of health until three specimens have been proved negative.

There seems to have been some confusion as regards what was to happen to the medical students who were in their final years—*i.e.*, the third to the sixth year. It had been formerly notified from the War Office that they were not to join the combatant forces. They therefore continued with their studies, most of them wearing distinguishing badges showing to which hospital they were attached. Last week they were notified that attestation was necessary. They seemed to have assumed from this statement that they were going to be called up as combatants. Apparently, however, this is a misconception, and attestation was required to complete the Derby scheme. It is probable, however, that they will be asked to join the medical branch of the Officers' Training Corps in order to gain some knowledge of medical service before qualification. It is also possible that they may be asked to serve in the Army Medical Service in a position similar to that of the surgeon probationer employed by the navy. Men who have been through their dressing and clerking can apply for the post of surgeon probationer in the navy, and if ap-

pointed are usually attached to a small boat, such as a torpedo boat or a destroyer. The General Medical War Committee and the various examining bodies have agreed to accept time served in these appointments as counting for time which would have been spent in the hospitals during their curriculum. At the present time the Naval Medical Service is filled, and no more commissions are being given. Applicants may, however, put down their names on a waiting list.

It is believed that a change in the policy of the Medical Department of the War Office is gradually being introduced, in connection with the hospitals. The authorities are gradually closing down the smaller hospitals which have hitherto supplied beds, and have been staffed by civilian practitioners, although of course under the control of the War Office. More direct control is deemed advisable. In order to obtain such control, it is necessary to concentrate military beds as much as possible, and all the staff have to be under the direct control of the War Office, and accordingly they have to be members of the R. A. M. C. This is, no doubt, an advantage to the military, but will most probably increase the expenditure of the Army Medical Service. At the present time when everybody is being made to economize, it seems to some of the public that this is a step in the wrong direction, and that economy is going to be sacrificed for a state of efficiency which is not necessary. At the same time the War Office is cutting down the numbers of the staffs working at the base hospitals, and has introduced a scheme by which fewer will be on regular duty. Some of the remainder will be called up directly occasion requires. This may free a certain number of the redundant staff for other duties. So long as permanent residents look after the wards of the hospitals, this scheme would work satisfactorily. These resident staffs have in the past been regarded as the nucleus from which a large draft could be drawn in case of emergency. If such a draft were necessary, it would mean the calling up of a large number of the senior staff, who would not be nearly so well acquainted with the inmates, to replace those sent abroad.

Although so many men have been called up, there still seem plenty to be seen in the streets and railways. More women are being employed as ticket collectors and lift operators, and each week shows more acting as tram and bus conductors. It is understood that they are not to be employed as drivers of these vehicles, and that the occupation of bus driver or tram driver is one that has been starred. It is very noticeable that the youths now employed in greater numbers are younger than was formerly the case in similar occupations.

This past week there have been snowstorms much heavier than usual at this time of year. The fall has been fairly universal, and in this respect London has not had the fortune to be one of the areas where the fall was light. The usual men employed by the borough authorities to clear the snow were this year dispensed with, and very little effort was made to clear the streets. Due warning was given by the authorities that they did not intend to send out the street sweepers in the event of snow. An exception was made in some of the principal thoroughfares on the third or fourth day, and by means of the usual hose the slush was slowly got rid of. In the residential quarters, however, no efforts were made on the part of the authorities. However, most householders cleaned their own patches—those parts of the pavement lying in front of their own houses. The man who has a corner house is obviously at a disadvantage in this case. Most of the efforts were amateurish, and nobody appeared to have any ashes or sand to dispense. Fortunately it has not frozen, and when the snow was cleared away, the thaw in the day completed the task. If we had been so unfortunate as to have a hard frost on the first or second day, the state of the pavements would have been extraordinarily dangerous. It was, however, quite amusing to see a number of the Fellows of the College of Physicians and Surgeons busily employed with coal shovel and drawing-room carpet sweeper trying to improve the appearance of their front doors.